



«حل سوالات تمرین صفحه ۱۴»

$$*\sin^2 \theta + \cos^2 \theta = 1 \rightarrow \left(\frac{\sqrt{\mu}}{\mu}\right)^2 + \cos^2 \theta = 1 \rightarrow \frac{\mu}{\mu} + \cos^2 \theta < 1$$

$$\cos^2 \theta = \frac{q}{\mu} \rightarrow \cos \theta \rightarrow +\frac{\sqrt{q}}{\mu}$$

$$\rightarrow -\frac{\sqrt{q}}{\mu} \quad (\text{بعد از}) \quad \checkmark$$

$$P(\cos \theta, \sin \theta) \rightarrow P\left(-\frac{\sqrt{q}}{\mu}, \frac{\sqrt{\mu}}{\mu}\right)$$

$$P(\cos \theta, \sin \theta) \rightarrow P\left(\frac{\sqrt{\mu}}{\mu}, -\frac{1}{\mu}\right)$$

$$\cos \theta = \frac{\sqrt{\mu}}{\mu} \quad \sin \theta = -\frac{1}{\mu} \quad \tan \theta = \frac{\sin \theta}{\cos \theta} = \frac{-\frac{1}{\mu}}{\frac{\sqrt{\mu}}{\mu}} = -\frac{1}{\sqrt{\mu}} = -\frac{1}{\mu}$$

$$\text{ا) } \sin(-\alpha) = -\sin \alpha \rightarrow \cos(-\alpha) = \cos \alpha$$

$$\text{ب) } \sin(\pi - \alpha) = \sin \alpha \rightarrow \sin(\pi + \alpha) = -\sin \alpha \rightarrow \cos\left(\frac{\pi}{\mu} + \alpha\right) = -\sin \alpha$$

$$\text{ج) } \tan\left(\frac{\pi}{\mu} - \alpha\right) = \cot \alpha \quad \text{د) } \cos(\pi - \alpha) = \cos \alpha \quad \text{ز) } \sin\left(\alpha - \frac{\pi}{\mu}\right) \rightarrow$$

$$\sin\left(-\left(\frac{\pi}{\mu} - \alpha\right)\right) \rightarrow -\sin\left(\frac{\pi}{\mu} - \alpha\right) \rightarrow -(-\cos \alpha) \rightarrow \cos \alpha$$

$$\text{ب) } \cos(\alpha - \pi) \rightarrow \cos(\pi - \alpha) \rightarrow -\cos \alpha$$

$$\text{ا) } \sin(-\alpha) = -\sin \alpha \rightarrow \sin(-\pi) = -\sin \pi \neq \sin \pi \quad \text{ز)$$

$$\rightarrow \sin\left(\frac{\pi}{\mu}\right) = \sin\left(\pi - \frac{\omega \pi}{\mu}\right) = \sin \frac{\omega \pi}{\mu} = \sin \frac{\omega \pi}{\mu} \quad \text{و)$$

$$\text{ب) } \cos \alpha + \underbrace{\cos(\pi - \alpha)}_{-\cos \alpha} = \cos \alpha - \cos \alpha = 0 = 0 \quad \text{و)$$

$$\text{ج) } \sin(\pi - \alpha) = \sin \alpha \neq \sin \pi - \sin \alpha \quad \text{ز)$$

$$\text{ا) } \frac{\tan 40^\circ - \tan 10^\circ}{1 + \tan 40^\circ \tan 10^\circ} \rightarrow \frac{\sqrt{\mu} - \frac{\sqrt{\mu}}{\mu}}{1 + \left(\sqrt{\mu} \times \frac{\sqrt{\mu}}{\mu}\right)} = \frac{\frac{\mu}{\mu} \sqrt{\mu}}{1 + 1} = \frac{\frac{\mu}{\mu} \sqrt{\mu}}{2} = \frac{\frac{1}{\mu} \sqrt{\mu}}{2} = \frac{\sqrt{\mu}}{2\mu} \quad \text{و)$$

$$\rightarrow \frac{F \sin 10^\circ - \cos 10^\circ}{\tan F \omega^\circ} = \frac{\cancel{F \sin(10^\circ - \omega^\circ)} - \cancel{\cos(10^\circ - \omega^\circ)}}{\tan(F \omega^\circ + \omega^\circ)} = \frac{F \sin \omega^\circ + \cos \omega^\circ}{\tan F \omega^\circ}$$

$$\rightarrow \frac{F\left(\frac{1}{\mu}\right) + \frac{1}{\mu}}{1} = F + \frac{1}{\mu} = \frac{\infty}{\mu}$$

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$$\text{C) } \frac{\sin \alpha \cos \omega - \gamma \sin \omega \tan \beta}{\cot \gamma - \tan \alpha + \cot \omega} = \frac{\frac{\sin \omega}{\sin(\alpha - \omega)} \cos \omega - \gamma \sin \omega \frac{-\tan \gamma}{\tan(\alpha - \omega)}}{\cot \gamma - \tan(\omega - \gamma) + \cot(\omega - \omega)}$$

$$\rightarrow \frac{\left( \frac{1}{\mu} x \frac{\sqrt{\mu}}{\mu} \right) - \gamma \left( \frac{1}{\mu} x - \frac{\sqrt{\mu}}{\mu} \right)}{\left( \gamma x \frac{\sqrt{\mu}}{\mu} \right) - \frac{\sqrt{\mu}}{\mu} - \frac{\sqrt{\mu}}{\mu}} = \frac{\frac{\sqrt{\mu}}{\mu} + \frac{\sqrt{\mu}}{\mu}}{\frac{\gamma \sqrt{\mu}}{\mu} - \frac{\sqrt{\mu}}{\mu} - \frac{\omega \sqrt{\mu}}{\mu}} = \frac{\frac{\omega \sqrt{\mu}}{\mu}}{-\gamma \sqrt{\mu} \cancel{\mu}} = -\frac{1}{\lambda}$$

$$\Rightarrow \sin\left(\frac{121\pi}{4}\right) + \cos\left(\frac{121\pi}{4}\right) + \tan\left(\frac{121\pi}{4}\right) = \sin\left(\frac{12\pi}{4} + \frac{\pi}{4}\right) + \cos\left(\frac{12\pi}{4} - \frac{\pi}{4}\right) + \tan\left(\frac{12\pi}{4} + \frac{\pi}{4}\right)$$

$$+ \tan\left(\frac{12\pi}{4} + \frac{\pi}{4}\right) \rightarrow \sin\left(\gamma_0\pi + \frac{\pi}{4}\right) + \cos\left(\omega_1\pi - \frac{\pi}{4}\right) + \tan\left(\kappa_0\pi + \frac{\pi}{4}\right) \rightarrow$$

$$\frac{1}{\mu} - \frac{\sqrt{\mu}}{\mu} + \frac{\sqrt{\mu}}{\mu} = \frac{\mu - \mu \cancel{\sqrt{\mu}} + \gamma \sqrt{\mu}}{4}$$

$$\rightarrow \sin\left(\frac{129\pi}{4}\right) \cdot \cos\left(\frac{129\pi}{4}\right) \cdot \tan\left(\frac{1288\pi}{4}\right) \cdot \cot\left(\frac{1288\pi}{4}\right) =$$

$$\sin(\kappa_4\pi) \cdot \cos(\gamma_4\pi - \frac{\pi}{4}) \cdot \tan(\omega_4\pi - \frac{\pi}{4}) \cdot \cot(\omega_4\pi - \frac{\pi}{4})$$

$$\rightarrow 0 \times \cos \frac{\pi}{\mu} \times -\tan \frac{\pi}{\mu} \times -\cot \frac{\pi}{\epsilon} = 0$$

$$\Rightarrow \frac{\sin \gamma \omega \cos \omega + \cos \gamma \omega \sin \omega}{\tan \alpha \cot \gamma - \cot \epsilon \tan \omega} = \frac{\sin(\alpha + \gamma \omega) \cos \omega + \cos(\alpha - \gamma \omega) \sin \omega}{\tan((\alpha + \gamma \omega) \cot \gamma - \cot(\alpha + \gamma \omega) \tan(\omega - \mu))}$$

$$\rightarrow \frac{-\sin \gamma \omega \cos \omega + (-\cos \gamma \omega) \sin \omega}{\tan \omega \cot \gamma - \cot \gamma \tan \omega} = \frac{\left( -\frac{\sqrt{\mu}}{\mu} x \frac{\sqrt{\mu}}{\mu} \right) + \left( -\frac{\sqrt{\mu}}{\mu} x \frac{\sqrt{\mu}}{\mu} \right)}{\frac{\sqrt{\mu}}{\mu} \cancel{x} \frac{\sqrt{\mu}}{\mu} + \frac{\sqrt{\mu}}{\mu} x \frac{\sqrt{\mu}}{\mu}} \rightarrow$$

$$\frac{-\frac{\sqrt{\mu}}{\mu} + \frac{-\sqrt{\mu}}{\mu}}{\frac{\mu}{\mu}} = \frac{-\frac{\mu \sqrt{\mu}}{\mu}}{\frac{\mu}{\mu}} = -\frac{\mu \sqrt{\mu}}{\mu}$$



$$\text{ا) } \frac{\tan(x + \frac{v\pi}{r}) + \sin(v\pi - n) + r\cos(x - \frac{u\pi}{r}) + \cot(x - u\pi)}{\cot(x - \frac{w\pi}{r}) + \sin(\frac{v\pi}{r} + n) + r\cos(x - 12\pi) + \tan(x - v\pi)} = -4$$

$$\rightarrow \frac{-\cot n + \sin n - r\sin n + \cot n}{-\tan n - \cos n + r\cos n + \tan n} = \frac{-r\sin n}{r\cos n} = -\tan n$$

$$\text{ب) } \sin 20^\circ + r\sin 140^\circ - \cos 110^\circ + r\sin 110^\circ - r\cos 110^\circ = \sin(110^\circ + 2^\circ) + r\sin(110^\circ - 2^\circ) - \cos(90^\circ - 2^\circ) + r\sin(90^\circ - 2^\circ) - r\cos(90^\circ + 2^\circ) \rightarrow -\sin 2^\circ + r\sin 2^\circ - \sin 110^\circ - r\sin 110^\circ + r\cos 2^\circ = \sin 2^\circ$$

$$\text{c) } \frac{r\sin \frac{51\pi}{10} + \sin(-\frac{\pi}{10}) + \sin(\frac{59\pi}{10}) - r\sin \frac{11\pi}{10}}{\cos(-\frac{\pi}{10}) \times \tan(\frac{11\pi}{10}) + r\cos \frac{5\pi}{10} + \sin \frac{19\pi}{10}} =$$

$$\frac{r\sin(\frac{5\pi}{10} + \frac{\pi}{10}) - \sin(\frac{\pi}{10}) + \sin(\frac{5\pi}{10} - \frac{\pi}{10}) - r\sin(\pi + \frac{\pi}{10})}{\cos(\frac{\pi}{10}) \times \tan(\pi + \frac{\pi}{10}) + r\cos(\frac{\pi}{10} - \frac{\pi}{10}) + \sin(\frac{5\pi}{10} - \frac{\pi}{10})} =$$

$$\frac{r\sin \frac{\pi}{10} - \sin \frac{\pi}{10} + \sin \frac{\pi}{10} + r\sin \frac{\pi}{10}}{\cos \frac{\pi}{10} \times \tan \frac{\pi}{10} + r\sin \frac{\pi}{10} - \sin \frac{\pi}{10}} = \frac{r\sin \frac{\pi}{10}}{r\sin \frac{\pi}{10}} = r$$

$\downarrow \sin \frac{\pi}{10}$

$$\text{d) } \sin(\alpha - w\pi) \rightarrow \sin(-(w\pi - \alpha)) \rightarrow -\sin(w\pi - \alpha) \rightarrow -\sin \alpha = -\frac{1}{4}$$

$$\rightarrow \sin(\frac{w\pi}{r} - \alpha) = -\cos \alpha \rightarrow -(-\frac{1}{4}) = +\frac{1}{4}$$

$$\text{e) } \tan(\frac{w\pi}{r} + \alpha) = -\cot \alpha \rightarrow -(-\frac{r}{w}) = +\frac{r}{w}$$

$$*\sin^2 \alpha + \cos^2 \alpha = 1 \rightarrow \frac{w^2}{100} + \cos^2 \alpha = 1 \rightarrow \cos^2 \alpha = \frac{48}{100} \rightarrow \cos \alpha = \pm \frac{4}{10} \rightarrow \cos \alpha = \pm \frac{2}{5}$$

$\downarrow \text{معنی مثبت cos} \alpha \text{ را بگیرید}$

$$\cot \alpha \rightarrow \frac{\cos \alpha}{\sin \alpha} \rightarrow \frac{-\frac{1}{4}}{\frac{1}{4}} = -\frac{r}{w}$$

«حل سوالات تستی مسخر»

$$*\tan 10^\circ = 1 - \sqrt{\mu}$$

- ۱

$$\frac{\mu \sin 140^\circ - \cos 10^\circ}{\sin 140^\circ - \sqrt{\mu} \cos 10^\circ} = \frac{\mu \sin(110^\circ - 10^\circ) - \overbrace{\cos(110^\circ + 10^\circ)}^{\text{مسخر}}}{\sin(140^\circ - 10^\circ) - \sqrt{\mu} \cos 10^\circ} \rightarrow$$

$$\rightarrow \frac{\mu \sin 10^\circ + \cos 10^\circ}{-\sin 10^\circ - \sqrt{\mu} \cos 10^\circ} = \frac{\mu \tan 10^\circ + 1}{-\tan 10^\circ - \sqrt{\mu}} = \frac{\mu(1 - \sqrt{\mu}) + 1}{-1 + \sqrt{\mu} - \sqrt{\mu}} \rightarrow$$

$$\frac{\mu - \mu\sqrt{\mu} + 1}{-1} = -1 + \mu\sqrt{\mu}$$

$$\cos(\nu\pi - \alpha) = \frac{1}{\nu}$$

- ۹

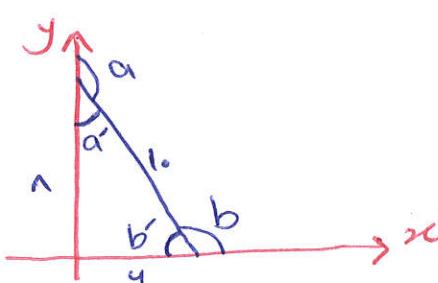
$$\cos(\nu\pi - \alpha) = -\cos\alpha = \frac{1}{\nu} \rightarrow \cos\alpha = -\frac{1}{\nu} \quad \text{دراین مسیر است} \quad \sin\alpha \leftarrow$$

$$*\sin^2\alpha + \cos^2\alpha = 1 \rightarrow \sin^2\alpha + \frac{1}{\nu^2} = 1 \rightarrow \sin^2\alpha = \frac{\nu^2 - 1}{\nu^2} \rightarrow \sin\alpha = -\frac{\sqrt{\nu^2 - 1}}{\nu}$$

- ۱۰

$$\tan F\omega^\circ = \frac{\sin F\omega^\circ}{\cos F\omega^\circ} \rightarrow 1 \quad \text{بطی} \rightarrow (\nu, \epsilon)$$

$$y - y_1 = a(n - n_1) \rightarrow y - \nu = 1(n - \nu) \rightarrow y - \nu = x - \nu \rightarrow y = x + 1$$



$$\sin\alpha \rightarrow \sin(\pi - \alpha) = \sin\alpha' = \frac{4}{10}$$

$$\cos\beta \rightarrow \cos(\pi - \beta) = -\cos\beta' = -\frac{4}{10}$$

$$\sin\alpha - \cos\beta = \frac{4}{10} - \frac{-4}{10} = \frac{15}{10} = \frac{4}{5}$$

- ۱۱



حل سوالات تست صفحه ۱۴

$$A = \sin \mu \omega_0 \sin \nu \omega_0 + \cos \mu \omega_0 \cos \nu \omega_0 \rightarrow \quad \text{Q1} \text{ نیز}$$

$$\sin(\mu \omega_0 - \omega_0) \sin(\nu \omega_0 - \omega_0) + \cos(\mu \omega_0 - \omega_0) \cos(\nu \omega_0 + \omega_0) \rightarrow$$

$$(-\sin \omega_0)(-\sin \omega_0) + (-\cos \omega_0)(\cos \omega_0) \rightarrow (-\frac{1}{r})(-\frac{\sqrt{r}}{r}) + (-\frac{\sqrt{r}}{r})(+\frac{1}{r}) \rightarrow$$

$$\rightarrow \frac{\sqrt{r}}{r} - \frac{\sqrt{r}}{r} = 0 \quad \text{Q2} \text{ نیز}$$

$$\cos(\mu \omega_0) + \sin(\mu \omega_0) + \cot(\nu \omega_0) + \tan(-\nu \omega_0) \Rightarrow$$

$$\cos(\mu \omega_0 - \omega_0) + \sin(\nu \omega_0 - \omega_0) + \cot(\nu \omega_0 + \omega_0) - \tan(\omega_0 - \omega_0) \rightarrow$$

$$+ \cos \omega_0 - \sin \omega_0 + \cot \omega_0 - (-\tan \omega_0) = \frac{1}{r} - \frac{1}{r} + \sqrt{r} - (-\sqrt{r}) = r \sqrt{r}$$

$$\frac{r \sin \nu \omega_0 + \cos \nu \omega_0}{\sin \nu \omega_0 + r \cos \nu \omega_0} = \frac{r \sin(\omega_0 + \nu \omega_0) + \cos(\nu \omega_0 + \omega_0)}{\sin(\omega_0 - \nu \omega_0) + r \cos(\omega_0 - \nu \omega_0)} = \quad \text{Q3} \text{ نیز} - \mu$$

$$\rightarrow \frac{-r \sin \nu \omega_0 + \sin \nu \omega_0}{\sin \nu \omega_0 + r \sin \nu \omega_0} = \frac{-\sin \nu \omega_0}{r \sin \nu \omega_0} = -\frac{1}{r} \quad \text{Q4} \text{ نیز}$$

$$\tan \nu \omega_0 + r \sin(-\nu \omega_0) \cos(\mu \omega_0) + \frac{1}{\sin(-\omega_0)} \rightarrow$$

$$\tan(\omega_0 - \nu \omega_0) - r \sin(\nu \omega_0 + \omega_0) \cos(\mu \omega_0 - \omega_0) + \frac{1}{-\sin(\omega_0 - \nu \omega_0)} \rightarrow$$

$$- \tan \omega_0 - (r \sin \omega_0)(\cos \omega_0) + \frac{1}{-\sin \omega_0} \rightarrow -\sqrt{r} - r \left( \frac{1}{r} \right) \left( \frac{\sqrt{r}}{r} \right) - \frac{1}{\frac{1}{r}} \rightarrow$$

$$-\sqrt{r} - \frac{\sqrt{r}}{r} - r = -\frac{r \sqrt{r}}{r} - r \rightarrow$$

$$\frac{\sin \omega \omega + r \cos \nu \omega}{r \sin \nu \omega - \cos \mu \nu \omega} = \frac{\sin(\omega_0 - \nu \omega_0) + r \cos(\omega_0 + \nu \omega_0)}{r \sin(\nu \omega_0 + \mu \omega_0) - \cos(\mu \omega_0 - \nu \omega_0)} = \quad \text{Q5} \text{ نیز} - \omega$$

$$\frac{\cos \mu \omega - r \cos \nu \omega}{-r \cos \nu \omega - \cos \mu \omega} = \frac{-\cos \mu \omega}{-r \cos \nu \omega} = +\frac{1}{r}$$



&lt;&lt; حل سوالات تست صفحه ۱۴ &gt;&gt;

$$\sin \tau_0 + r \sin(-\mu \omega_0) + \cos(-\eta_0) - \mu \cos(\nu \omega_0) - \nu \sin(\kappa_0) = \quad \text{--- ۴}$$

$$\sin(\eta_0 + \kappa_0) - r \sin(\mu \omega_0 - \nu_0) + \cos(\eta_0 + \nu_0) - \mu \cos(\nu \omega_0 - \kappa_0) - \nu \sin \eta_0 \rightarrow$$

$$-\sin \eta_0 + r \sin \nu_0 - \sin \kappa_0 + \mu \sin \nu_0 - \nu \sin \kappa_0 = 0$$

$$\frac{\cos \omega + \cos \eta \omega + \cos \nu \omega + \cos \kappa \omega}{\cos \nu \omega + \cos \eta \omega + \cos \kappa \omega + \cos \nu \omega} = \frac{\cos \omega + \cos \eta \omega + \cos(\eta_0 - \omega) + \cos(\nu_0 - \kappa_0)}{\cos(\eta_0 - \omega) + \cos(\eta_0 + \omega) + \cos(\eta_0 + \nu_0) + \cos(\nu_0 + \kappa_0)}$$

$$\rightarrow \frac{\cos \omega + \cos \eta \omega - \cos \eta \omega - \sin \eta \omega}{\sin \eta \omega - \sin \omega - \cos \omega + \sin \omega} = \frac{\cos \omega - \sin \eta \omega}{\sin \eta \omega - \cos \omega} = -1$$

$$A = r \sin^2(\nu \omega) + k \sin^2(\kappa \omega) - \frac{\cos(\nu \omega)}{\cos(\mu \eta_0)} \quad \text{--- ۵} \quad - \tan(1^\circ \omega) \rightarrow$$

$$\underbrace{-\sin \nu \omega}_{- \sin \nu \omega} \quad \underbrace{-\sin \eta_0}_{- \sin \eta_0} \quad \underbrace{\frac{\cos(\eta_0 + \nu_0)}{\cos(\nu_0 + \kappa_0)}}_{\cos \nu_0} - \tan(1^\circ \omega - \kappa \omega) =$$

$$r \left( -\frac{\sqrt{r}}{r} \right)^2 + k \left( -\frac{\sqrt{\mu}}{r} \right)^2 - \frac{(-1)^{\frac{\mu}{r}}}{\frac{\sqrt{\mu}}{r}} - (-1) = r \left( \frac{1}{r} \right) + k \left( \frac{\mu}{r} \right) + 1 + 1 =$$

$$1 + \mu + 1 + 1 = 4$$

$$\tan^{\mu} \times \tan^{\eta} \times \tan^{\omega} \times \tan^{\nu} \times \tan^{\kappa} \times \tan^{\rho} \quad \text{--- ۶}$$

$$\tan^{\mu} = \cot \eta \nu$$

$$\tan \eta \nu = \cot \nu \mu$$

$$\tan \omega^{\mu} = \cot \nu \nu$$

(1)

$$\cot \eta \nu \times \cot \nu \mu \times \cot \nu \kappa \times \tan \eta \nu \times \tan \nu \mu \times \tan^{\rho} \nu = 1$$

(1)      (1)

طبق ماده روابط را در:  
 $\tan \alpha \times \cot \alpha = 1$



«حل سوالات تستی» ۱۴

$$A = \tan 1^\circ + \tan 2^\circ + \tan 3^\circ + \dots + \tan 17^\circ$$

$$B = \cot 1^\circ + \cot 2^\circ + \cot 3^\circ + \dots + \cot 17^\circ$$

$$\begin{aligned} \cot 1^\circ &\rightarrow -\cot 17^\circ \\ \cot 2^\circ &\rightarrow -\cot 16^\circ \\ \vdots & \\ \cot 17^\circ &\rightarrow -\cot 1^\circ \end{aligned} \quad \left. \begin{array}{c} \\ \\ \end{array} \right\} \text{لکل} \quad \text{طبق مذکور روابط زاویه‌ها مکمل}$$

$$A = \tan \alpha \cot(-\alpha) + \sin^r(-\alpha) + \cos^r(\alpha) = \cancel{\tan \alpha} - r \sin^r \alpha + \cancel{\cos^r \alpha} \quad \text{برای } -\alpha$$



<< ۱۷ نویسنده >>

$$\frac{\sin\left(\frac{w\pi}{r}-x\right) - r \cos\left(\frac{\pi}{r}+x\right)}{r \cos(\pi+x) - \sin(w\pi-x)} = \frac{-\cos x + r \sin x}{-r \cos x - \sin x} = -0.4 \quad \text{پسندیده}$$

$$\xrightarrow{\text{کسر}} \frac{-1 + r \tan x}{-r - \tan x} = -\frac{\mu}{\omega} \quad \tan x \rightarrow 0$$

$$\frac{-1 + r a}{-r - a} = -\frac{\mu}{\omega} \rightarrow -\omega + 1 \cdot a = +9 + r a$$

$$\begin{aligned} \tan x = r \rightarrow \cot x &= \frac{1}{r} \\ \tan\left(\frac{w\pi}{r}+x\right) &= -\cot x \end{aligned} \quad \Rightarrow -\frac{1}{r}$$

پسندیده

$$\checkmark \sin(\pi-\theta) = \sin\theta \neq \sin\pi - \sin\theta \leftarrow r \quad \checkmark \cos\theta - \cos\theta = 0 \quad \leftarrow 1$$

$$\checkmark -\cos\theta + \cos\theta = 0 \quad \leftarrow r \quad \checkmark \sin^2\theta + \cos^2\theta = 1 \quad \leftarrow w$$

$$\tan\left(\frac{\pi}{r}+x\right) = -\cot x \neq \cot x \quad \text{پسندیده} \quad -18$$

$$\textcircled{1} \tan\left(\frac{w\pi}{r}\right) \rightarrow \tan\left(\pi - \frac{\pi}{4}\right) \rightarrow -\tan\frac{\pi}{4} \quad \checkmark \quad \text{پسندیده} \quad -10$$

$$\textcircled{2} \cot\left(\frac{w\pi}{r}\right) \rightarrow \cot\left(\pi - \frac{\pi}{4}\right) \rightarrow -\cot\frac{\pi}{4} \quad \xrightarrow{\text{کسر}} -\tan\frac{\pi}{4} \quad \checkmark$$

$$\textcircled{3} \cot\left(\frac{w\pi}{r}\right) \rightarrow \cot\left(\pi + \frac{\pi}{4}\right) \rightarrow \cot\frac{\pi}{4} \quad \times$$

$$\textcircled{4} \tan\left(-\frac{\pi}{4}\right) \rightarrow \tan\left(\pi - \frac{\pi}{4}\right) \rightarrow -\tan\frac{\pi}{4} \quad \checkmark$$



<< ۱۷ تمرین مسأله ۲ >>

$$A = \frac{\sin\left(\frac{11\pi}{F} - \alpha\right) + \sin\left(1\pi - \alpha\right)}{\sin\left(5\pi + \alpha\right) + \sin\left(\frac{14\pi}{F} + \alpha\right)} = \frac{-\cos\alpha - \sin\alpha}{-\sin\alpha + \cos\alpha} \quad \text{برای اینجا} \rightarrow \begin{array}{l} \text{۱۴} \\ \text{۱۵} \end{array}$$

$$\tan\alpha = \frac{1}{F} \rightarrow \frac{-1 - \tan\alpha}{-\tan\alpha + 1} \rightarrow \frac{-1 - \frac{1}{F}}{-\frac{1}{F} + 1} = \frac{-\frac{F+1}{F}}{\frac{F-1}{F}} = -1^o$$

$$A = \sin\frac{\omega\pi}{F} \tan\frac{\omega\pi}{F} \rightarrow \sin\left(\pi - \frac{\pi}{n}\right) \tan\left(\pi + \frac{\pi}{F}\right) \rightarrow \begin{array}{l} \text{۱۶} \\ \text{۱۷} \end{array}$$

$$\left(+\sin\frac{\pi}{F}\right)\left(\tan\frac{\pi}{F}\right) \rightarrow \frac{1}{F} \times 1 = \frac{1}{F}$$

$$A = \sin\left(\frac{\omega\pi}{F} + \alpha\right) + \cos\left(\frac{\omega\pi}{F} - \alpha\right) - \sin\left(\frac{\pi}{F} + \alpha\right) + \sin\left(\pi - \alpha\right)$$

$$A \rightarrow \cos\alpha - \sin\alpha - \cos\alpha + \sin\alpha = 0$$

$$\frac{\cos\left(\frac{\omega\pi}{F} + \theta\right) - \cos\left(\pi + \theta\right)}{\sin\left(\pi - \theta\right) - \sin\left(\omega\pi + \theta\right)} = \frac{\sin\theta - (-\cos\theta)}{\sin\theta - (-\sin\theta)} = \frac{\sin\theta + \cos\theta}{\sin\theta + \sin\theta} \quad \text{برای} \rightarrow \begin{array}{l} \text{۱۸} \\ \text{۱۹} \end{array}$$

$$\frac{\sin\theta + \cos\theta}{\sin\theta} \rightarrow \frac{\tan\theta + 1}{\tan\theta} = \frac{1+F}{F(-1+F)} = \frac{1+F}{F(F-1)} = F \quad \text{برای} \rightarrow \begin{array}{l} \text{۲۰} \\ \text{۲۱} \end{array}$$

$$\tan\theta \rightarrow 0/F$$

$\begin{array}{l} \text{۲۰} \\ \text{۲۱} \end{array}$

$$\cos^{\frac{1}{F}}\frac{\pi}{\omega} + \cos^{\frac{1}{F}}\frac{\omega\pi}{\omega} + \cos^{\frac{1}{F}}\frac{5\pi}{\omega} + \cos^{\frac{1}{F}}\frac{n\pi}{\omega} + \cos^{\frac{1}{F}}\frac{15\pi}{\omega}$$

$$\cos^{\frac{1}{F}}\frac{15\pi}{\omega} \rightarrow -\cos^{\frac{1}{F}}\frac{15\pi}{\omega}$$

$$\cos^{\frac{1}{F}}\frac{5\pi}{\omega} \rightarrow -\cos^{\frac{1}{F}}\frac{n\pi}{\omega}$$

$$-\cos^{\frac{1}{F}}\frac{15\pi}{\omega} + \cos^{\frac{1}{F}}\frac{\omega\pi}{\omega} - \cos^{\frac{1}{F}}\frac{n\pi}{\omega} + \cos^{\frac{1}{F}}\frac{5\pi}{\omega} + \cos^{\frac{1}{F}}\frac{15\pi}{\omega} = \cos^{\frac{1}{F}}\frac{\omega\pi}{\omega} = \frac{1}{F} = \frac{1}{n}$$

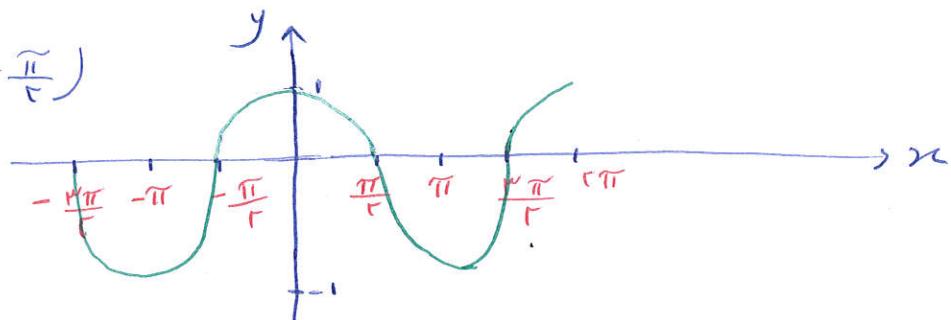


<< ۲۰ سوال از تئوری معین صفت >>

a)  $y = \sin(x + \frac{\pi}{F})$

$D \rightarrow R$

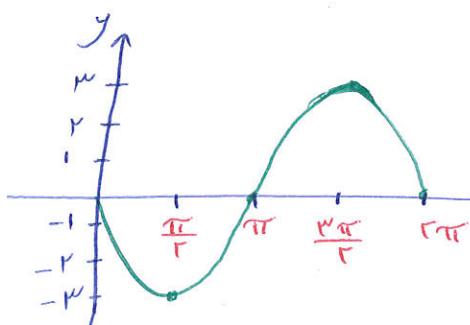
$R \rightarrow [-1, 1]$



b)  $y = F \sin(-x) \rightarrow -F \sin x$

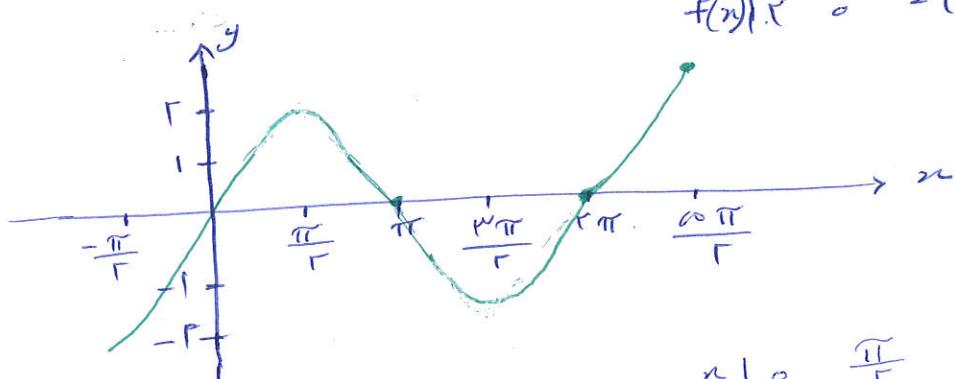
$x$	0	$\frac{\pi}{F}$	$\pi$	$\frac{4\pi}{F}$	$5\pi$
$y$	0	- $F$	0	$F$	0

$D \rightarrow R$   
 $R \rightarrow [-F, F]$



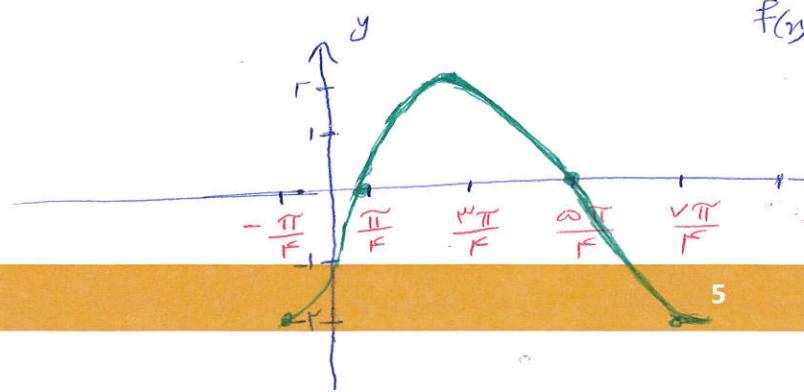
$x$	0	$\frac{\pi}{F}$	$\pi$	$\frac{4\pi}{F}$	$5\pi$
$x - \frac{\pi}{F}$	$-\frac{\pi}{F}$	$\frac{\pi}{F}$	$\frac{3\pi}{F}$	$\frac{10\pi}{F}$	$\frac{15\pi}{F}$
$y$	1	0	-1	0	1
$f(x)$	$-F$	0	$F$	0	$-F$

c)  $y = F \cos(x - \frac{\pi}{F})$



$D \rightarrow R$   
 $R \rightarrow [-F, F]$

d)  $y = -F \cos(x + \frac{\pi}{F})$



$x$	0	$\frac{\pi}{F}$	$\pi$	$\frac{4\pi}{F}$	$5\pi$
$x + \frac{\pi}{F}$	$-\frac{\pi}{F}$	$\frac{\pi}{F}$	$\frac{4\pi}{F}$	$\frac{10\pi}{F}$	$\frac{15\pi}{F}$
$y$	1	0	-1	0	1
$f(x)$	$-F$	0	$F$	0	$-F$

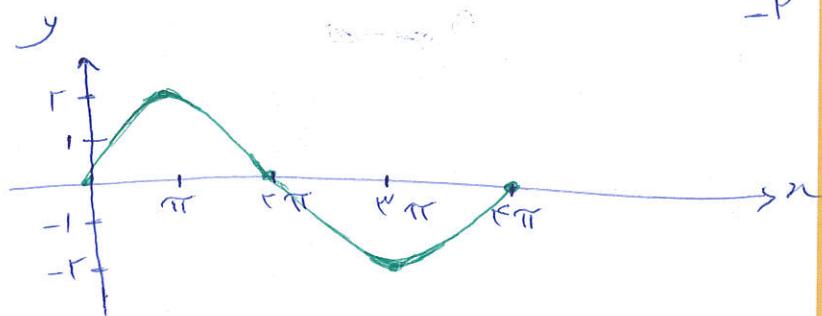
$D \rightarrow R$   
 $R \rightarrow [-F, F]$



## «حل سوالات تست سینوسی» ۲۰

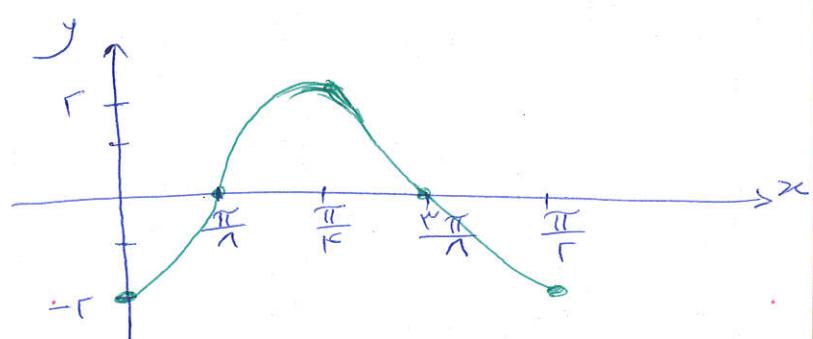
$$\text{ا) } y = 2 \sin \frac{1}{2}x$$

$x$	0	$\frac{\pi}{2}$	$\pi$	$\frac{3\pi}{2}$	$2\pi$
$\frac{1}{2}x$	0	$\frac{\pi}{4}$	$\frac{\pi}{2}$	$\frac{3\pi}{4}$	$\pi$
$y$	0	1	0	-1	0
$f(x)$	0	2	0	-2	0



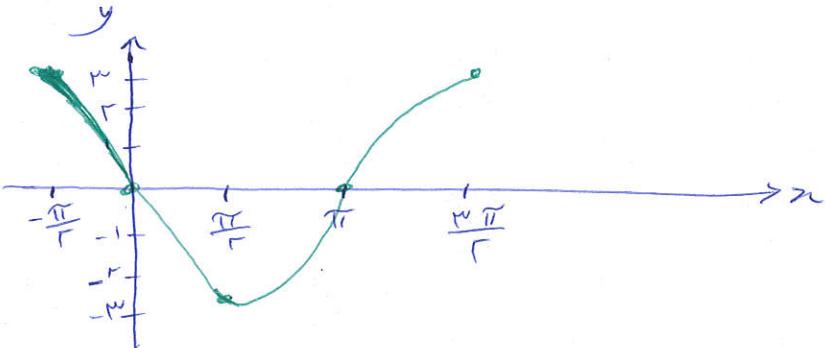
$$\text{ب) } y = -2 \cos \frac{1}{2}x$$

$x$	0	$\frac{\pi}{2}$	$\pi$	$\frac{3\pi}{2}$	$2\pi$
$\frac{1}{2}x$	0	$\frac{\pi}{4}$	$\frac{\pi}{2}$	$\frac{3\pi}{4}$	$\pi$
$y$	1	0	-1	0	1
$f(x)$	-2	0	2	0	-2



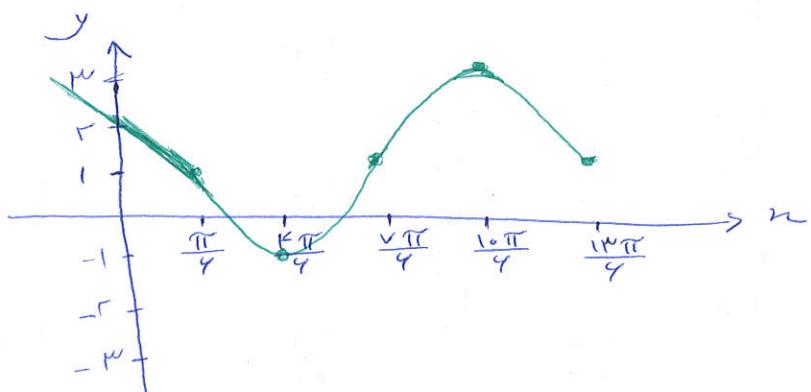
$$\text{ج) } y = 2 \cos \left(\frac{\pi}{2} + x\right)$$

$x$	0	$\frac{\pi}{2}$	$\pi$	$\frac{3\pi}{2}$	$2\pi$
$\frac{\pi}{2} + x$	$-\frac{\pi}{2}$	0	$\frac{\pi}{2}$	$\pi$	$\frac{3\pi}{2}$
$y$	1	0	-1	0	1
$f(x)$	2	0	-2	0	2



$$\text{د) } -2 \sin \left(x - \frac{\pi}{4}\right) + 1$$

$x$	0	$\frac{\pi}{2}$	$\pi$	$\frac{3\pi}{2}$	$2\pi$
$x - \frac{\pi}{4}$	$-\frac{\pi}{4}$	$\frac{\pi}{4}$	$\frac{3\pi}{4}$	$\frac{11\pi}{4}$	$\frac{15\pi}{4}$
$y$	0	1	0	-1	0
$f(x)$	1	-1	1	-2	1

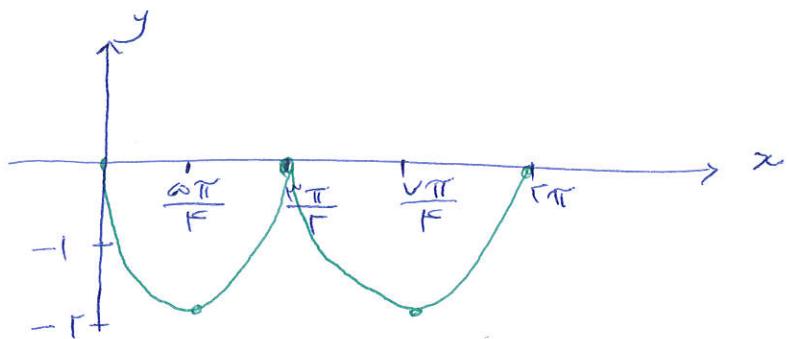




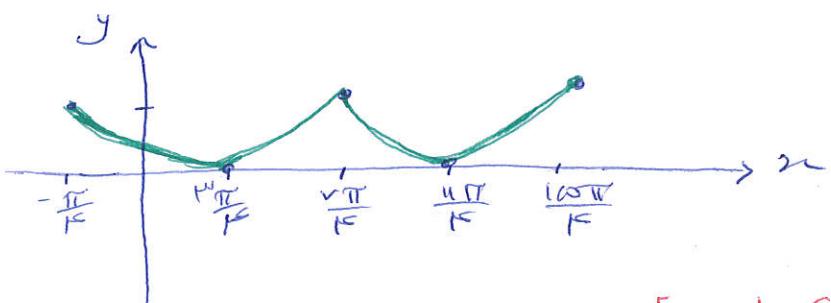
« حل سوالات تمرینی صفحه ۲۰ »

- ۲ ادامه سوال

$$x) - |r \sin(\frac{\pi}{F} + \pi)|$$



$$y) y = |\cos(\frac{\pi}{F} - \pi n)|$$



$$f(n) = \sin^5 x - \cos x \rightarrow \sin^5 n = 1 - \cos^5 n$$

$$f(n) = 1 - \cos^5 x - \cos x = -\cos^5 x - \cos x + 1$$

بعض فرازندهای جزء کامل ساده نیست

$$f(n) = -(\cos^5 x + \cos x) + 1 = -\underbrace{(\cos^5 x + \cos x + \frac{1}{F} - \frac{1}{F})}_{(\cos x + \frac{1}{F})^5} + 1 = -(\cos x + \frac{1}{F})^5 + \frac{1}{F}$$

$$-1 \leq \cos x < 1 \rightarrow -\frac{1}{F} \leq \cos x + \frac{1}{F} \leq \frac{1}{F}$$

$$\text{محدوده } (\cos x + \frac{1}{F})^5 \text{ را به دست آورید } \rightarrow -\frac{1}{F} \leq -(\cos x + \frac{1}{F})^5 \leq \frac{1}{F}$$

$$0 \leq (\cos x + \frac{1}{F})^5 \leq \frac{1}{F} \rightarrow -\frac{1}{F} \leq -(\cos x + \frac{1}{F})^5 \leq \frac{1}{F}$$

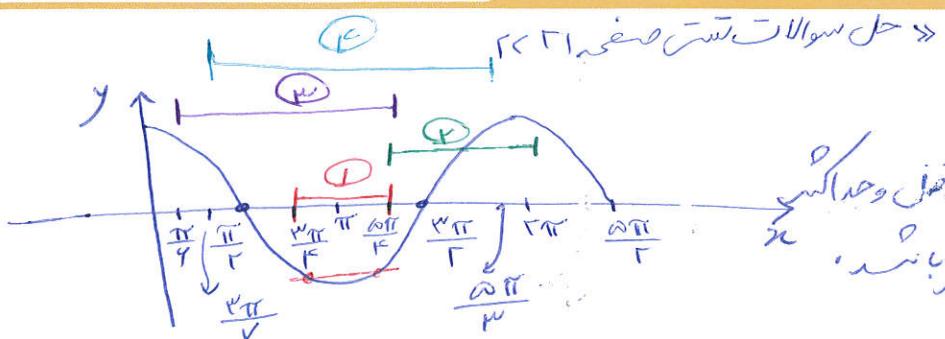
$$\rightarrow -1 \leq -(\cos x + \frac{1}{F})^5 \leq \frac{1}{F} \rightarrow -1 \leq f(n) \leq \frac{1}{F}$$

$$(0, -1) \in f \rightarrow f(0) = -1 \rightarrow \cos b\pi + a = -1$$

$$(\pi, 0) \in f \rightarrow f(\pi) = 0 \rightarrow \cos(\pi + b\pi) + a = 0 \rightarrow -\cos b\pi + a = 0$$

$$a = -1 \quad f(n) = \cos(x + b\pi) - \frac{1}{F} \rightarrow 1 - \frac{1}{F} = \frac{1}{F} \rightarrow \text{بُعدین مقادیر برابر}\star$$

بُعدین مقادیر برابر باعث زمانی است که  $\cos(x + b\pi)$  برابر ۱ باشد



۱- مزین

پرایل بک برید بودن آن و آن دو (حداصل و حد اکسترمیم) مقدار (ربع) نباید در بازه دور رونظر باشد.

$$y = a \cos \omega x + b$$

$$x \rightarrow \pi \quad y \rightarrow a \cos \pi + b \rightarrow -a + b = -r \quad \text{مزین}$$

$$-rx \left( \frac{1}{\omega} a + b = 0 \right)$$

$$x \rightarrow \frac{\omega \pi}{\omega} \quad y \rightarrow a \cos \frac{\omega \pi}{\omega} + b = 0$$

$$-a + b = r$$

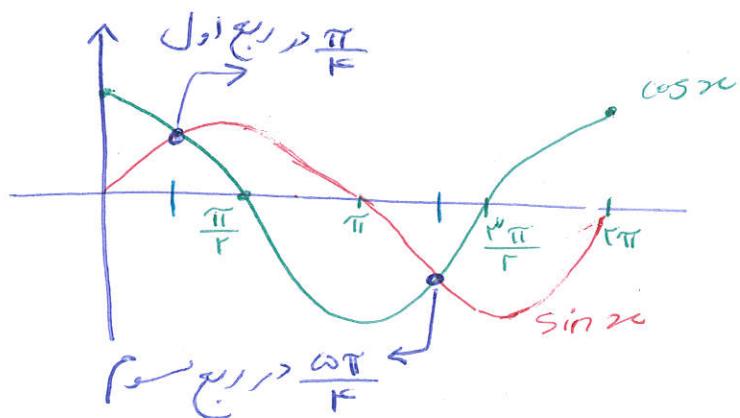
$$y \rightarrow a \cos \left( \omega \pi - \frac{\pi}{\omega} \right) + b = 0$$

$$-\frac{1}{\omega} a - a = r$$

$$y \rightarrow \frac{1}{\omega} a + b = r$$

$$-\frac{\omega}{\omega} a = r \rightarrow a = -r$$

$$(a, b) \rightarrow (-r, r)$$



۲- مزین

cos x در (0, \frac{\pi}{4}, \frac{\omega \pi}{\omega}) نمودار cos x ترا رنگ نهاد است.

$$\cos(\omega \pi + n) = -\cos x$$

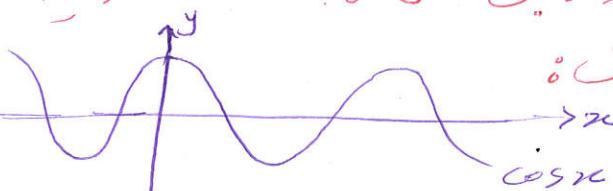
$$\sin(\frac{\omega \pi}{\omega} + n) = -\cos x$$

$$\sin(\frac{\omega \pi}{\omega} - x) = -\cos x$$

$$\sin(\frac{\omega \pi}{\omega} + n) = \cos x$$

۳- مزین

در حقیق شکل همیشہ -cos x بود (۴، ۵، ۶، ۷) نمودار cos x به صورت متمایل است.

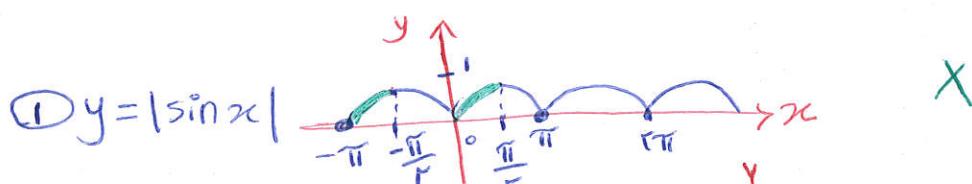




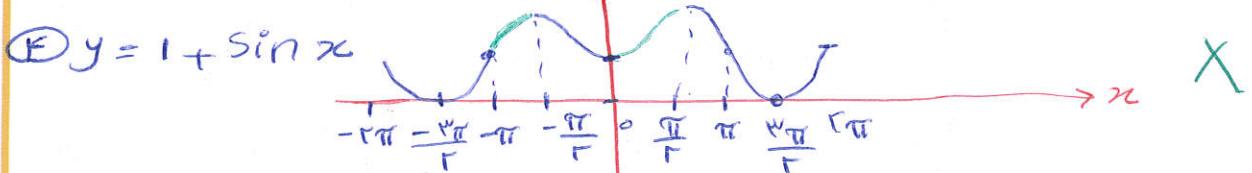
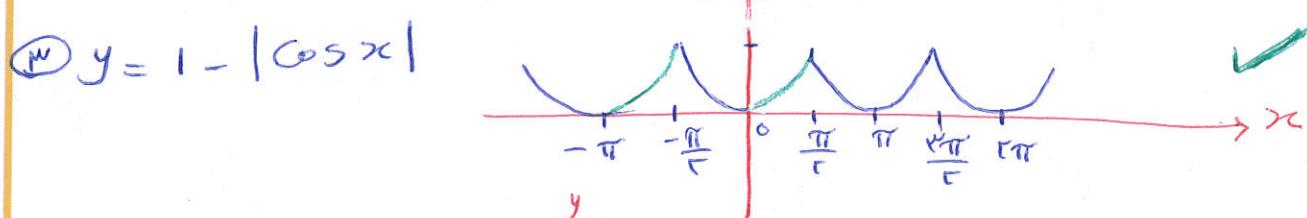
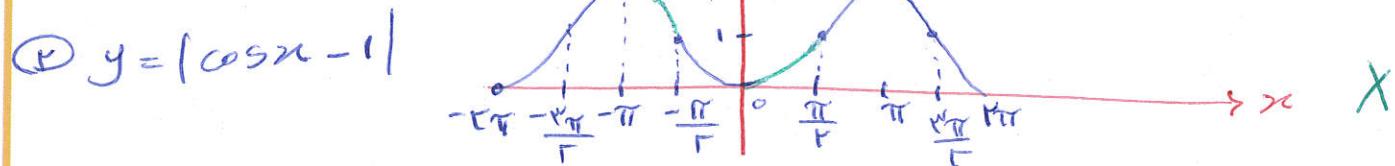
«حل سوالات تست صفحه ۲۱»

۱۵) کسر نهاده

برای رسم نمودار  $y = \cos(x - 1)$  ابتدا  $y = \cos x$  را می‌کشیم آورده و سپس این نمایع را می‌کشیم و اندیشه را می‌کشیم که بخلاف  $y = \cos x$  که بدلی نموده

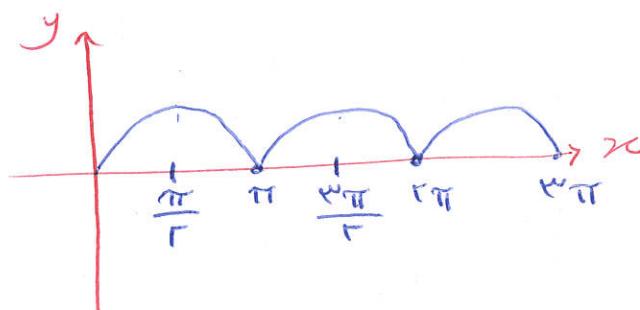


۱۶) کسر نهاده



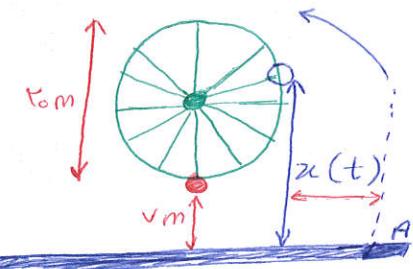
$$f(n) = \sqrt{1 - \cos^2 x} = \sqrt{\sin^2 x} = |\sin x|$$

۱) کسر نهاده



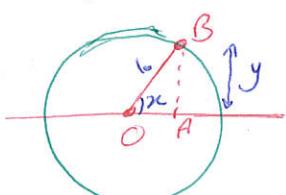


«حل سوالات سریع صفحه ۲۳»



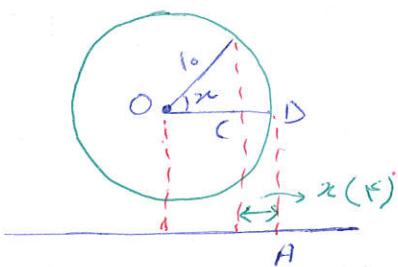
- ۱

$$\frac{120\pi}{t} = \frac{5\pi}{\omega} \rightarrow \omega = \frac{\pi t}{4}$$



$$\sin x = \frac{y}{1} \rightarrow y = 1 \cdot \sin x \rightarrow y = 1 \cdot \sin \frac{\pi t}{4} \quad (1)$$

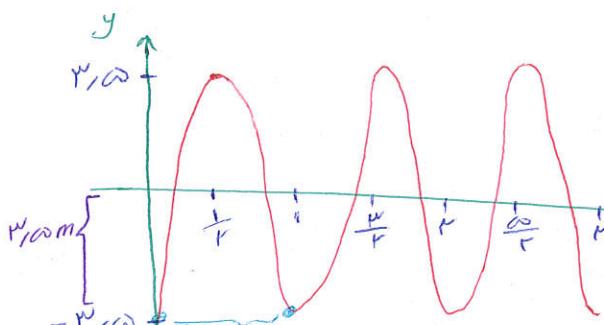
$$y = 1 \cdot \sin \frac{\pi t}{4} + v \quad (2)$$



$$CD = OD - OC$$

$$OC = 1 \cdot \cos x \rightarrow x(t) = 1 - 1 \cdot \cos \frac{\pi t}{4}$$

$$d = -1 \cdot \cos \left( \frac{\pi t}{4} \right)$$

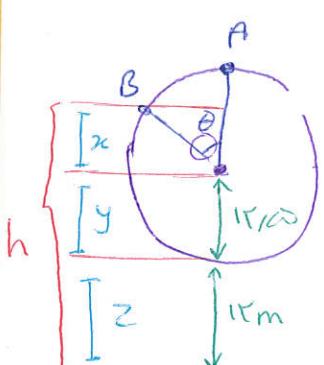


- ۲

الف) نظریه تحدی است که مخودار بمحور مختص جریحو در حیث این بسیار خوب است

حیرت

ب) این حل پر کر



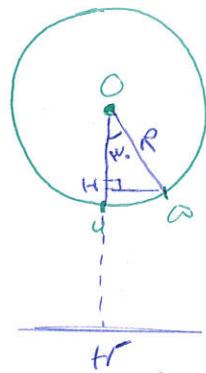
«سوالات تست چهارم»

$$\frac{1}{r} \text{ min} \quad \text{rad} \quad t \text{ min} \quad \theta$$

$$\theta \rightarrow n\pi t$$

۱-  
۱-

پرسش از تست چهارم: طبق این اتفاق، بین زوایه مرکزی  $\theta$  و زمان  $t$  را درین تغییرهای از طرز نمودار  $\theta = n\pi t$  می‌دانیم. از این تغییرهای از طرز نمودار  $z = 15 \text{ cm}$ ,  $y = 15 \text{ cm} \Rightarrow z = 15 \text{ cm} \cos \theta \Rightarrow \theta = n\pi t$   
 $z = 15 \text{ cm} \Rightarrow y = 15 \text{ cm} \cos(n\pi t)$



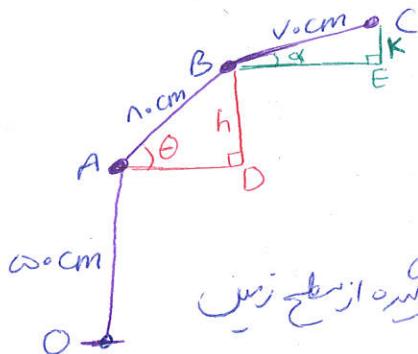
$$HH' = OH - OH \rightarrow (R + r) - OH \xrightarrow{R = \omega t} r_1 \text{ cm} - OH$$

$$OH \rightarrow \cos \alpha = \frac{\sqrt{r^2}}{R} = \frac{OH}{r_1}$$

$$OH \rightarrow \frac{\omega t \times \sqrt{r^2}}{R} = \frac{\sqrt{r^2}}{t_0} = \frac{\omega t}{t_0} = \omega t \text{ cm}$$

$$HH' \rightarrow r_1 - \omega t = \omega t \text{ cm} \rightarrow \text{سرعت متراند}$$

۱-  
۱-



$$\triangle ABD \rightarrow \sin \theta = \frac{h}{r} \rightarrow h = r \sin \theta$$

$$\triangle BCE \rightarrow \sin \alpha = \frac{K}{v} \rightarrow K = v \sin \alpha$$

ارتفاع زوایه از سطح زمین  $\rightarrow y = OA + h + k$

$$y = \omega t + r \sin \theta + v \sin \alpha$$

$$y = 15\omega \quad \theta \rightarrow \omega t$$

$$15\omega = \omega t + v \sin \alpha$$

$$v \omega = v \sin \alpha \quad \frac{1}{r} = \sin \alpha$$

$$\alpha = \omega t$$



## د) حل سوالات تستی مسیر صفحه ۲۴

$$\text{الف) } \sin \omega \rightarrow \sin(\epsilon\omega - \psi_0) = \sin \epsilon\omega \cos \psi_0 - \cos \epsilon\omega \sin \psi_0 \rightarrow$$

- ۱

$$\frac{\sqrt{r}}{F} \times \frac{\sqrt{\mu}}{F} - \frac{\sqrt{r}}{F} \times \frac{1}{F} \Rightarrow \frac{\sqrt{4}-\sqrt{r}}{F}$$

$$\rightarrow) \cos \nu \omega \rightarrow \cos(\epsilon\omega + \psi_0) = \cos \epsilon\omega \cos \psi_0 - \sin \epsilon\omega \sin \psi_0 \rightarrow$$

$$\frac{\sqrt{r}}{F} \times \frac{\sqrt{\mu}}{F} - \frac{\sqrt{r}}{F} \times \frac{1}{F} \Rightarrow \frac{\sqrt{4}-\sqrt{r}}{F}$$

 $\pi \frac{\pi}{F} \quad \pi \frac{\pi}{F}$ 

$$\text{ب) } \tan \frac{\nu \pi}{F} \rightarrow \frac{\sin \frac{\nu \pi}{F}}{\cos \frac{\nu \pi}{F}} = \frac{\sin(\frac{\nu \pi}{F} + \frac{\epsilon \pi}{F})}{\cos(\frac{\nu \pi}{F} + \frac{\epsilon \pi}{F})} = \frac{\sin \frac{\nu \pi}{F} \cos \frac{\epsilon \pi}{F} + \sin \frac{\epsilon \pi}{F} \sin \frac{\nu \pi}{F}}{\cos \frac{\nu \pi}{F} \cos \frac{\epsilon \pi}{F} - \sin \frac{\nu \pi}{F} \sin \frac{\epsilon \pi}{F}}$$

$$\rightarrow \frac{\frac{\sqrt{r}}{F} \times \frac{1}{F} + \frac{\sqrt{r}}{F} \times \frac{\sqrt{\mu}}{F}}{\frac{\sqrt{r}}{F} \times \frac{1}{F} - \frac{\sqrt{r}}{F} \times \frac{\sqrt{\mu}}{F}} = \frac{\frac{\sqrt{r}}{F} + \frac{\sqrt{4}}{F}}{\frac{\sqrt{r}}{F} - \frac{\sqrt{4}}{F}} = \frac{\frac{\sqrt{r}+\sqrt{4}}{\sqrt{r}-\sqrt{4}}}{\cancel{\sqrt{r}-\sqrt{4}}} = \frac{\sqrt{r}+\sqrt{4}}{\cancel{\sqrt{r}-\sqrt{4}}}$$

$$\text{ج) } \cot \nu \omega \rightarrow \cot(\nu \psi_0 + \epsilon \omega) \rightarrow -\tan \omega$$

$$-\tan \omega \Rightarrow -\frac{\sin \omega}{\cos \omega} = -\frac{\sin(\epsilon\omega - \psi_0)}{\cos(\epsilon\omega - \psi_0)} = -\frac{\sin \epsilon\omega \cos \psi_0 - \sin \psi_0 \cos \epsilon\omega}{\cos \epsilon\omega \cos \psi_0 + \sin \epsilon\omega \sin \psi_0} \rightarrow$$

$$\rightarrow -\frac{\left( \frac{\sqrt{r}}{F} + \frac{\sqrt{\mu}}{F} - \frac{1}{F} \times \frac{\sqrt{r}}{F} \right)}{\left( \frac{\sqrt{r}}{F} \times \frac{\sqrt{\mu}}{F} + \frac{\sqrt{r}}{F} \times \frac{1}{F} \right)} = -\frac{\frac{\sqrt{4}}{F} - \frac{\sqrt{r}}{F}}{\frac{\sqrt{4}}{F} + \frac{\sqrt{r}}{F}} = -\frac{\frac{\sqrt{4}-\sqrt{r}}{F}}{\frac{\sqrt{4}+\sqrt{r}}{F}} = -\frac{\sqrt{4}-\sqrt{r}}{\sqrt{4}+\sqrt{r}}$$

- ۲

$$\sin \alpha = \frac{\omega}{\omega} \quad \cos \alpha = \frac{F}{\omega} \quad \text{اول} \alpha$$

$$\sin \beta = -\frac{\omega}{\omega} \quad \cos \beta = -\frac{F}{\omega} \quad \text{ثانی} \beta$$

$$\sin(\alpha + \beta) = \sin \alpha \cos \beta + \sin \beta \cos \alpha \rightarrow \frac{\omega}{\omega} \times -\frac{F}{\omega} + -\frac{\omega}{\omega} \times \frac{F}{\omega} \rightarrow \frac{-\omega F}{\omega \omega} - \frac{\omega F}{\omega \omega} = -\frac{\omega F}{\omega \omega}$$

$$\cos(\alpha - \beta) = \cos \alpha \cos \beta + \sin \alpha \sin \beta \rightarrow \frac{F}{\omega} \times -\frac{F}{\omega} + \frac{\omega}{\omega} \times -\frac{\omega}{\omega} \rightarrow \frac{-F^2}{\omega \omega} - \frac{\omega^2}{\omega \omega} = -\frac{F^2}{\omega \omega}$$



## «۱۴ مسأله تمرینی حل شده»

$$\sin \alpha = \frac{w}{\omega} \quad \cos \beta = -\frac{\omega}{r^{\mu}}$$

$$\cos \alpha = \frac{E}{\omega} \quad \sin \beta = -\frac{r^{\mu}}{r^{\mu}}$$

$$\sin(\alpha + \beta) \rightarrow \sin \alpha \cos \beta + \cos \alpha \sin \beta \rightarrow \frac{w}{\omega} \times \frac{-\omega}{r^{\mu}} + \frac{E}{\omega} \times \frac{r^{\mu}}{r^{\mu}} = \frac{w E}{\omega r^{\mu}} \quad (1)$$

$$\cos(\alpha + \beta) \rightarrow \cos \alpha \cos \beta - \sin \alpha \sin \beta \rightarrow \frac{E}{\omega} \times \frac{-\omega}{r^{\mu}} - \frac{w}{\omega} \times \frac{r^{\mu}}{r^{\mu}} = -\frac{w E}{\omega r^{\mu}}$$

برای محاسبه  $\cos(\alpha + \beta)$  و  $\sin(\alpha + \beta)$  دو مرحله داریم:

$$A = \frac{\sin^2 \alpha \cos^2 \beta - \sin^2 \beta \cos^2 \alpha}{\sin^2 \alpha \sin^2 \beta - \cos^2 \alpha \cos^2 \beta} \Rightarrow$$

$$(\sin \alpha \cos \beta - \sin \beta \cos \alpha)(\sin \alpha \cos \beta + \sin \beta \cos \alpha)$$

$$(\sin \alpha \sin \beta - \cos \alpha \cos \beta)(\sin \alpha \sin \beta + \cos \alpha \cos \beta) = \frac{\sin(\alpha - \beta) \sin(\alpha + \beta)}{\cos(\alpha - \beta) \cos(\alpha + \beta)}$$

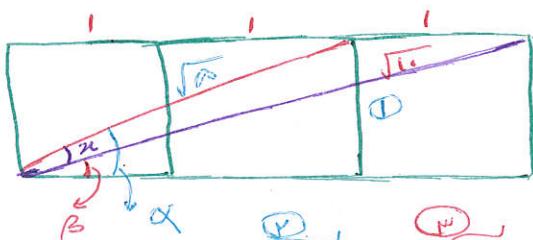
$$-\cos(\alpha + \beta)$$

$$\cos(\alpha - \beta)$$

$$-\tan(\alpha - \beta)$$

$$-\tan(\alpha - \beta) \times \tan(\alpha + \beta) \rightarrow -\tan \frac{\pi}{r^{\mu}} \times \frac{1}{r^{\mu}} \rightarrow -\tan(\pi - \frac{\pi}{r^{\mu}}) \times \frac{1}{r^{\mu}}$$

$$\rightarrow -1 \times -\tan \frac{\pi}{r^{\mu}} \times \frac{1}{r^{\mu}} \rightarrow \sqrt{r^{\mu}} \times \frac{1}{r^{\mu}} = \frac{\sqrt{r^{\mu}}}{r^{\mu}}$$



- ω

$$\cos \alpha \rightarrow \cos(\alpha - \beta) \rightarrow \cos \alpha \cos \beta + \sin \alpha \sin \beta \rightarrow \frac{r}{\sqrt{\omega}} \times \frac{w}{\sqrt{r^{\mu}}} + \frac{1}{\sqrt{\omega}} \times \frac{1}{\sqrt{r^{\mu}}} \rightarrow$$

$$\cos \alpha \rightarrow \frac{r}{\sqrt{\omega}} \quad \sin \alpha \rightarrow \frac{1}{\sqrt{\omega}}$$

$$\frac{w}{\sqrt{\omega}} + \frac{1}{\sqrt{\omega}} = \frac{\sqrt{\omega}}{\sqrt{\omega}} \rightarrow \frac{\sqrt{\omega} \times \sqrt{r^{\mu}}}{\sqrt{\omega}} \rightarrow \frac{\sqrt{\omega} \times \sqrt{r^{\mu}}}{\sqrt{\omega} \times 1}$$

$$\frac{\sqrt{\omega} \times \sqrt{r^{\mu}}}{1} \rightarrow$$

$$\cos \beta \rightarrow \frac{w}{\sqrt{r^{\mu}}} \quad \sin \beta \rightarrow \frac{1}{\sqrt{r^{\mu}}}$$



&lt;&lt; حل سوالات سری مسخر &gt;&gt;

$$\cos F_0 \cos l_0 - \sin F_0 \sin l_0 \rightarrow \cos(F_0 + l_0) = \cos \mu_0 \rightarrow \frac{\sqrt{\mu}}{F}$$

④  $\sin \mu_0 = -1$ 

$$\frac{1}{\sin \nu_0} = \frac{1}{\sin(\mu_0 + l_0)} = \frac{1}{\sin \mu_0 \cos l_0 + \sin l_0 \cos \mu_0} =$$

$$\frac{1}{F} \times \frac{\sqrt{\mu}}{F} + \frac{\sqrt{\mu}}{F} \times \frac{\sqrt{\mu}}{F} = \frac{\sqrt{\mu}}{F} + \frac{\sqrt{\mu}}{F} = \frac{\sqrt{\mu} + \sqrt{\mu}}{F} = \frac{2\sqrt{\mu}}{F}$$

⑤  $\sin \mu_0 = -1$ 

$$\rightarrow \frac{1}{\frac{\sqrt{\mu} + \sqrt{\mu}}{F}} = \frac{F}{\sqrt{\mu} + \sqrt{\mu}} = \frac{F(\sqrt{\mu} - \sqrt{\mu})}{F(\sqrt{\mu} + \sqrt{\mu})} = \sqrt{\mu} - \sqrt{\mu}$$

⑥  $\sin \mu_0 = -1$ 

$$\sin \alpha = \frac{\mu}{\omega}$$

$$\cos \beta = \frac{\nu}{\sqrt{\omega}}$$

$$\tan(\alpha + \beta) = \frac{\sin(\alpha + \beta)}{\cos(\alpha + \beta)} = \frac{\sin \alpha \cos \beta + \sin \beta \cos \alpha}{\cos \alpha \cos \beta - \sin \alpha \sin \beta} \rightarrow$$

$$\sin \beta = \frac{1}{\sqrt{\omega}}$$

$$\cos \alpha = \frac{\nu}{\omega}$$

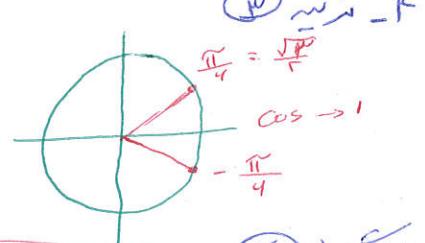
$$\tan(\alpha + \beta) = \frac{\frac{\mu}{\omega} \times \frac{\nu}{\sqrt{\omega}} + \frac{1}{\sqrt{\omega}} \times \frac{\nu}{\omega}}{\frac{\nu}{\omega} \times \frac{\nu}{\sqrt{\omega}} - \frac{\mu}{\omega} \times \frac{1}{\sqrt{\omega}}} = \frac{\frac{\mu \nu}{\omega \sqrt{\omega}} + \frac{\nu}{\omega \sqrt{\omega}}}{\frac{\nu^2}{\omega \sqrt{\omega}} - \frac{\mu}{\omega \sqrt{\omega}}}$$

$$\rightarrow \frac{\frac{1}{\omega \sqrt{\omega}}}{\frac{\nu}{\omega \sqrt{\omega}}} \rightarrow \frac{1}{\nu} = r$$

$$\frac{\sqrt{\mu}}{F} \leq \cos x \cos \nu x + \sin x \sin \nu x \leq 1$$

$$\frac{\sqrt{\mu}}{F} \leq \cos(x - \nu x) \leq 1 \rightarrow \frac{\sqrt{\mu}}{F} \leq \cos n \leq 1$$

$\cos(-n) = \cos n$



$$\frac{\cos(x+y) + r \sin x \sin y}{\sin(x+y) - r \sin x \cos y} \rightarrow \frac{\cos x \cos y - \sin x \sin y + r \sin x \sin y}{\sin x \cos y + \sin y \cos x - r \sin x \cos y}$$

⑦  $\sin \mu_0 = \omega$ 

$$\rightarrow \frac{\cos x \cos y + \sin x \sin y}{\sin x \cos y - \sin x \cos y} = \frac{\cos(x-y)}{\sin(y-x)} = \frac{\cos(y-x)}{\sin(y-x)} = \frac{y-x}{-\pi/\mu} = -\frac{\pi}{\mu}$$

$$\frac{\cos(-\pi/\mu)}{\sin(-\pi/\mu)} = \frac{\cos \pi/\mu}{-\sin \pi/\mu} = \frac{1}{-\frac{\sqrt{\mu}}{F}} = -\frac{1}{\sqrt{\mu}} = -\frac{\sqrt{\mu}}{\mu}$$



### حل سوالات تست صفحه ۲۵

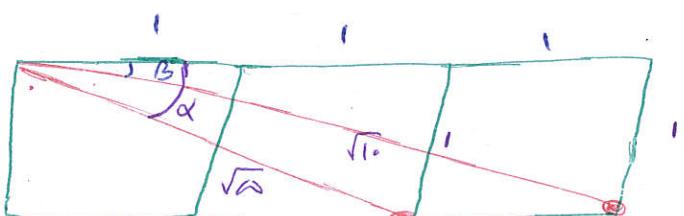
$$\sin \theta + \sqrt{\mu} \cos \theta \xrightarrow{\text{حل عبارت پر از ضرب جزئی}} \frac{1}{\sqrt{\mu}} \sin \theta + \frac{\sqrt{\mu}}{\sqrt{\mu}} \cos \theta \rightarrow \textcircled{1} \text{ درجه } -4$$

$$\rightarrow \sin \omega \sin \theta + \cos \omega \cos \theta \rightarrow \cos \theta \cos \omega + \sin \theta \sin \omega \rightarrow \cos(\theta - \omega)$$

$$\rightarrow \cos l \rightarrow \cos(\theta - l) \rightarrow \sin l \xrightarrow{\text{حل عبارت پر از تقسیم (در راه ضرب جزئی)}} r \sin l$$

$$A = \frac{\sin \omega - \sin \theta \cos l}{\cos \omega + \sin \theta \sin l} \rightarrow \frac{\sin(\theta + l) - \sin \theta \cos l}{\cos(\theta + l) + \sin \theta \sin l} = \textcircled{1} \text{ درجه } -v$$

$$A \rightarrow \frac{\sin \theta \cos l + \sin l \cos \theta - \sin \theta \cos l}{\cos \theta \cos l - \sin \theta \sin l + \sin \theta \sin l} \rightarrow \frac{\sin l \cos \theta}{\cos \theta \cos l} = \frac{\sin l}{\cos l} = \tan l = \alpha$$



$$\cos \alpha \rightarrow \frac{\mu}{\sqrt{\omega}} \quad \sin \alpha \rightarrow \frac{1}{\sqrt{\omega}}$$

$$\cos \beta \rightarrow \frac{\omega}{\sqrt{l}} \quad \sin \beta \rightarrow \frac{1}{\sqrt{l}}$$

$$\cos(\alpha + \beta) = \cos \alpha \cos \beta - \sin \alpha \sin \beta \Rightarrow \frac{\mu}{\sqrt{\omega}} \times \frac{\omega}{\sqrt{l}} - \frac{1}{\sqrt{\omega}} \times \frac{1}{\sqrt{l}} \rightarrow$$

$$\rightarrow -\frac{1}{\sqrt{\omega}} - \frac{1}{\sqrt{\omega}} = -\frac{1}{\sqrt{\omega}} = \frac{\omega}{\omega \sqrt{\omega}}^2 \cdot \frac{1}{\sqrt{\mu}} = \frac{\sqrt{\mu}}{\mu}$$



### حل سوالات پیش‌نیم

-1

$$\text{ا) } \sin \Gamma \omega \rightarrow \gamma \sin^r \alpha = 1 - \cos \Gamma \alpha$$

$$\gamma \sin^r \Gamma \omega = 1 - \cos \Gamma \omega \rightarrow \gamma \sin^r \Gamma \omega = 1 - \frac{\sqrt{\gamma}}{\Gamma}$$

$$\rightarrow \sin^r \Gamma \omega = \frac{1}{\Gamma} - \frac{\sqrt{\gamma}}{\Gamma} = \frac{\Gamma - \sqrt{\gamma}}{\Gamma} \rightarrow \sin \Gamma \omega = \frac{\sqrt{\Gamma - \sqrt{\gamma}}}{\Gamma}$$

$$\rightarrow) \cos 4\omega \times \cos l\omega = -\cos l\omega x - \cos v\omega \rightarrow +60 \sin \omega \sin l\omega$$

$\cos(90^\circ - l\omega) = \sin l\omega$

$$\rightarrow \frac{\sin \omega}{\Gamma} = \frac{l}{\Gamma} = \frac{1}{F}$$

$$\text{ب) } \cos 4v\omega \rightarrow 1 + \cos \Gamma \alpha = \gamma \cos^r \alpha$$

$$1 + \cos l\omega \rightarrow \gamma \cos^r \alpha \quad \frac{1 + \cos(1\omega - \Gamma \omega)}{-\cos \Gamma \omega} \rightarrow \gamma \cos^r \alpha$$

$$1 - \cos \Gamma \omega = \gamma \cos^r 4v\omega$$

$$1 - \frac{\sqrt{\gamma}}{\Gamma} = \gamma \cos^r 4v\omega \rightarrow \frac{\Gamma - \sqrt{\gamma}}{\Gamma} = \gamma \cos^r 4v\omega \rightarrow \frac{\Gamma - \sqrt{\gamma}}{\Gamma} = \cos^r 4v\omega$$

$$\frac{\sqrt{\gamma - \sqrt{\gamma}}}{\Gamma} = \cos 4v\omega$$

$$\rightarrow) \sin \frac{\pi}{1\Gamma} \sin \frac{v\pi}{1\Gamma} \rightarrow \sin \frac{\pi}{1\Gamma} \cos \frac{\pi}{1\Gamma} \rightarrow \frac{\sin \frac{\pi}{4}}{\Gamma} = \frac{1}{\Gamma} = \frac{1}{F}$$

$$\sin \left( \frac{4\pi}{1\Gamma} + \frac{\pi}{1\Gamma} \right) = \cos \frac{\pi}{1\Gamma}$$

$\frac{\pi}{1\Gamma}$

$$\text{ج) } \frac{\sin x}{1 + \cos 2x} = \tan \frac{x}{\Gamma} \quad \frac{\sin x}{1 + \cos n} = \frac{\sin \frac{x}{\Gamma}}{\cos \frac{x}{\Gamma}} = \frac{x \sin \frac{x}{\Gamma} \cos \frac{x}{\Gamma}}{x \cos^r \frac{x}{\Gamma}} = \frac{\sin \frac{n}{\Gamma}}{\cos \frac{n}{\Gamma}}$$

$$\frac{x \cos^r \frac{x}{\Gamma}}{x \cos \frac{n}{\Gamma}} = 1$$

$$\rightarrow) \tan \Gamma x (\cot x - \tan x \tan \Gamma x) = \Gamma$$

$$\frac{\sin \Gamma x}{\cos \Gamma x} \times \frac{\cos x}{\sin x} - \frac{\sin x}{\cos n} \times \frac{\sin \Gamma x}{\cos \Gamma x} = \Gamma$$

$$\frac{\sin \Gamma x}{\cos \Gamma x} \left( \frac{\cos x}{\sin x} - \frac{\sin x}{\cos n} \right) = \Gamma \rightarrow \frac{\sin \Gamma x}{\cos \Gamma x} \times \frac{\cos \Gamma x}{\sin \Gamma x} = \Gamma$$

$$\cos \Gamma x \leftarrow \cos^r \Gamma x - \sin^r \Gamma x$$

$$\sin \Gamma x \leftarrow \sin \Gamma x \cos \Gamma x$$



دستورالعمل سایر مسخر

$$\sin \alpha = \frac{\sqrt{q}}{\mu}$$

$$\sin^r \alpha = r \times \frac{\sqrt{q}}{\mu} \times \frac{\sqrt{\mu}}{\mu} = \frac{r \times \mu \sqrt{\mu}}{\mu} = \frac{r \sqrt{\mu}}{\mu}$$

$$\cos \alpha = \frac{\sqrt{\mu}}{\mu}$$

$$\cos^r \alpha = r \cos^r \alpha - 1 \rightarrow r \times \frac{\mu}{\mu} - 1 \rightarrow \frac{\mu}{\mu} - 1 = -\frac{1}{\mu}$$

$$\cos F\alpha = \cos^r \alpha - \sin^r \alpha \rightarrow \frac{1}{\mu} - \frac{1}{\mu} = \frac{-1}{\mu}$$

$$A = \cos^n \alpha \sin^m \alpha - \sin^n \alpha \cos^m \alpha \rightarrow \cos^n \sin^m (\cos^r n - \sin^r m)$$

$$\underbrace{\cos^n \sin^m (\cos^r n - \sin^r m)}_{\frac{\sin^r \alpha}{\mu}} \underbrace{(\cos^r n + \sin^r m)}_{\cos^r \alpha} = \frac{\cos^n \sin^m}{\mu} = \frac{\sin F\alpha}{\mu}$$

$$\frac{\sin F\alpha}{\mu} = \frac{\sin(F\alpha \frac{\pi}{F\mu})}{\mu} = \frac{\sin \frac{\pi}{4}}{\mu} = \frac{1}{\mu} = \frac{1}{\lambda}$$

$$(\sin \alpha - \cos \alpha)^r \left(\frac{1}{\mu}\right)^r \rightarrow \underbrace{\sin^r \alpha + \cos^r \alpha}_{1} - r \sin \alpha \cos \alpha = \frac{1}{\mu}$$

$$\cos \left( \frac{n\pi}{\mu} - r\alpha \right) \rightarrow -\sin^r \alpha \quad 1 - \sin^r \alpha = \frac{1}{\mu}$$

$$\boxed{-\sin^r \alpha = -\frac{1}{\mu}} \quad \leftarrow \quad -\sin^r \alpha = \frac{1}{\mu} - 1 = -\frac{\mu}{\mu}$$

$$\sin \alpha \cos \alpha = \frac{\mu}{\lambda}$$

$$A = \sin \alpha - \cos \alpha \quad A^r = \frac{\sin^r \alpha + \cos^r \alpha - r \sin^r \alpha \cos^r \alpha}{\mu}$$

$$A^r = 1 - r \times \frac{\mu}{\lambda} \rightarrow A^r = 1 - \frac{\mu}{\mu} \rightarrow A^r = \frac{1}{\mu} \quad A \xrightarrow{\mu} \frac{1}{\mu} \quad \checkmark$$

جزو A نمودار  $\sin \alpha - \cos \alpha$  نمودار  $\sin \alpha \cos \alpha$  نمودار  $\sin^r \alpha \cos^r \alpha$  نمودار

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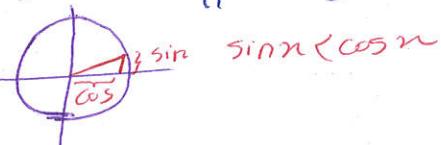


حل سوالات تمرینی پنجم

$$A = \left( \frac{\sin \frac{\pi}{15} + \cos \frac{\pi}{15}}{\sin \frac{\pi}{15} - \cos \frac{\pi}{15}} \right)^r \rightarrow A^r = \frac{\sin^r \frac{\pi}{15} + \cos^r \frac{\pi}{15} + r \sin \frac{\pi}{15} \cos \frac{\pi}{15}}{\sin^r \frac{\pi}{15} + \cos^r \frac{\pi}{15} - r \sin \frac{\pi}{15} \cos \frac{\pi}{15}} \quad -v$$

$$A^r = \frac{1 + \sin \frac{\pi}{4}}{1 - \sin \frac{\pi}{4}} \rightarrow A^r = \frac{1 + \frac{1}{\sqrt{2}}}{1 - \frac{1}{\sqrt{2}}} = \frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}-1}{2}} = \sqrt{2} \quad A^r = \sqrt{2} \quad A^{r\sqrt{2}} X \rightarrow -\sqrt{2} \quad \text{و تو}$$

برای  $A$  منفی است جمله اول نتیجه کشیده که  $\sin \frac{\pi}{15}$  در برابر  $\cos \frac{\pi}{15}$  بوده و  $\sin \frac{\pi}{15} < \cos \frac{\pi}{15}$  لذا  $A^r = \frac{1 + \sin \frac{\pi}{15}}{1 - \sin \frac{\pi}{15}}$  خواهد بود



$$\cos x = \frac{\sqrt{\omega}}{\omega}$$

$$\sin rx = r \times \frac{\sqrt{\omega}}{\omega} \times \frac{\sqrt{\omega}}{\omega} = \frac{r \times \omega}{\omega \times \omega} = \frac{r}{\omega} \quad -v$$

$$\sin rx = \frac{r\sqrt{\omega}}{\omega}$$

$$\cos rx = \cos x - \sin rx = \frac{\omega}{\omega \times \omega} - \frac{r\omega}{\omega \times \omega} = \frac{-r\omega}{\omega \times \omega} = -\frac{r}{\omega} = -\frac{r}{\omega}$$

$$\tan rx = \frac{\frac{r}{\omega}}{-\frac{r}{\omega}} = -\frac{r}{\omega} \quad \cot rx = \frac{-\frac{r}{\omega}}{\frac{r}{\omega}} = -\frac{\omega}{r}$$

|| |



«حل سوالات تست صفحه ۲۷»

$$\frac{1}{\sin \omega} - \frac{1}{\cos \omega} \rightarrow \frac{\cos \omega - \sin \omega}{\sin \omega \cos \omega}$$

④  $\sin \omega = -1$

$$A = \frac{\cos \omega - \sin \omega}{\sin \omega \cos \omega}$$

$$A^r = \frac{\cos^r \omega + \sin^r \omega - r \sin \omega \cos \omega}{(\sin \omega \cos \omega)^r}$$

$$A^r = \frac{1 - \sin^r \omega}{\left(\frac{\sin \omega}{r}\right)^r} \rightarrow A^r = \frac{1 - \frac{1}{r}}{\frac{1}{r^r}} = \frac{1}{\frac{1}{r^r}} = r \quad A^r = r \quad A = \sqrt{r}$$

$$\tan \alpha = \frac{\omega}{r} \quad \begin{array}{c} \alpha \\ \diagdown \\ \text{---} \\ \text{---} \end{array} \quad \sin \alpha = -\frac{\omega}{r} \quad \cos \alpha = -\frac{r}{\omega} \quad ④ \sin \omega = -r$$

$$\sin r \alpha = r \times \left(-\frac{\omega}{r}\right) \left(-\frac{r}{\omega}\right) = +\frac{r \omega}{r \omega}$$

$$\underbrace{\sin n \cos n}_{\frac{\sin r \alpha}{r}} \underbrace{(1 - r \sin^r n)}_{\cos r \alpha} \rightarrow \frac{\sin r n \cos r \alpha}{r} = \frac{\sin r \alpha}{r} \quad ④ \sin \omega = -r$$

$$\frac{\sin r \alpha}{r} = \frac{\sin(r \times \sqrt{r \omega})}{r} \Rightarrow \frac{\sin \omega}{\sqrt{r \omega}} = \frac{1}{r} = \frac{1}{n}$$

④  $\sin \omega = -r$

$$\frac{1 + \sin r \alpha}{\cos r \alpha} = \frac{\sin^r \alpha + \cos^r \alpha + r \sin \alpha \cos \alpha}{\cos^r \alpha - \sin^r \alpha} = \frac{(\sin \alpha + \cos \alpha)(\sin^{r-1} \alpha + \cos^{r-1} \alpha)}{(\cos \alpha - \sin \alpha)(\cos^{r-1} \alpha + \sin^{r-1} \alpha)}$$

$$\rightarrow \frac{\sin \alpha + \cos \alpha}{\cos \alpha - \sin \alpha} \xrightarrow{\substack{\cos \alpha \\ 1 + \tan \alpha \\ 1 - \tan \alpha}} \frac{1 + \tan \alpha}{1 - \tan \alpha}$$

④  $\sin \omega = -r$

$$\cos(\alpha + \frac{\pi}{\mu}) + \cos(\alpha - \frac{\pi}{\mu}) = \frac{r}{\mu}$$

$$\cos \alpha \cos \frac{\pi}{\mu} - \sin \alpha \sin \frac{\pi}{\mu} + \cos \alpha \cos \frac{\pi}{\mu} + \sin \alpha \sin \frac{\pi}{\mu} = \frac{r}{\mu}$$

$$r \cos \alpha \cos \frac{\pi}{\mu} = \frac{r}{\mu} \quad \cos \alpha \cos \frac{\pi}{\mu} = \frac{1}{\mu} \quad \cos \alpha = \frac{1}{\mu}$$

$$\cos r \alpha = r \cos^r \alpha - 1$$

$$\cos r \alpha = r \times \frac{1}{\mu} - 1 = -\frac{1}{\mu}$$



۲۰. سوالات تمرینی

$$\sin\left(\frac{\pi}{r} + \alpha\right) \sin\left(\pi + \alpha\right) - \sin\left(\pi - \alpha\right) \cos\left(-\alpha\right)$$

$$(\cos\alpha) \times (-\sin\alpha) - (\sin\alpha) \times \cos\alpha \rightarrow -r\sin\alpha\cos\alpha = -\sin^2\alpha$$

۱)  $\sin^2\alpha = ?$

$$\frac{\sin n + \sin r\alpha}{1 + \cos n + \cos r\alpha} \rightarrow \frac{\sin n + r\sin n \cos r\alpha}{\sin n + \cos n + \cos n + \cos r\alpha - \sin r\alpha} = \frac{\sin n + r\sin n \cos r\alpha}{\cos n + r\cos n}$$

$$\rightarrow \frac{\sin n(1 + r\cos n)}{\cos n(1 + r\cos n)} = \tan n$$

۲)  $\sin^2\alpha = ?$

$$f(\sin\alpha) = \cos r\alpha \quad f(\sin\alpha) = 1 - r\sin^2\alpha$$

$$f(n) = 1 - r\cos^2 n \quad n \rightarrow \frac{1}{r} \quad f\left(\frac{1}{r}\right) = 1 - r\left(\frac{1}{r}\right)^2 \rightarrow \frac{r}{n}$$

۳)  $\sin^2\alpha = ?$

$$\sin^2 n + \cos^2 n = \frac{n}{\omega}$$

$$(\sin^2 n + \cos^2 n)^r = 1$$

$$\underbrace{\sin^2 n + \cos^2 n}_{\frac{n}{\omega}} + r\sin^2 n \cos^2 n = 1$$

$$r\sin^2 n \cos^2 n = \frac{r}{\omega}$$

$$\boxed{\sin^2 n \cos^2 n = \frac{1}{\omega}}$$

$$(\sin^2 n + \cos^2 n)^4 = 1 \quad \sin^4 n + 4\sin^2 n \cos^2 n + 4\sin^2 n \cos^2 n + \cos^4 n = 1$$

$$\sin^4 n + \cos^4 n + \underbrace{4\sin^2 n \cos^2 n}_{4 \times \frac{1}{\omega}} (\underbrace{\sin^2 n + \cos^2 n}_{1}) = 1$$

$$\boxed{\sin^4 n + \cos^4 n = 1 - \frac{n}{\omega} = \frac{r}{\omega}}$$

۱