Subject: ( ) ۱۴,۷۵ حسابان یازدهم دفتر A Date:

(۱)

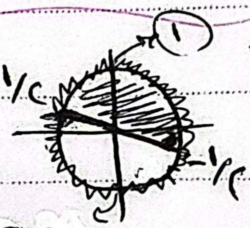
$\cot\alpha = \frac{\cos\alpha}{|\sin\alpha|} \Rightarrow \sin\alpha > 0$

$\frac{1}{|\cos\alpha|} - \frac{1}{\cot\alpha} = \frac{1-\sin\alpha}{|\cos\alpha|} \rightarrow \frac{1-1+\sin\alpha}{|\cos\alpha|} = \frac{1}{\cot\alpha}$

$\rightarrow \frac{\cos\alpha}{|\sin\alpha|} = \frac{|\cos\alpha|}{\sin\alpha} \rightarrow \cos\alpha > 0 \rightarrow$ ناحیه اول است

(۲)

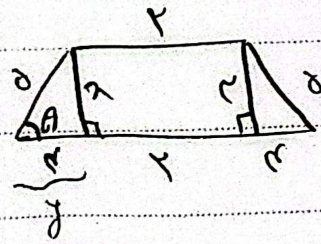
$-\pi/4 < 2x < 5\pi/4$



$-\frac{\sqrt{2}}{2} < \frac{m-1}{4} \le 1$

$-2 < m \le 5 \rightarrow (-1, 5]$

(۳)



$\cos\theta = \frac{x}{5} = \frac{6}{10} \rightarrow x = 3 \xrightarrow{\text{فیثاغورث}} y = 4$

$S = \frac{4 \times 9}{2} = 18$

$\cos\theta = \frac{x}{5} = \frac{6}{10}$, $x = 3$

$\sin\theta = \frac{h}{5} = \frac{8}{10}$, $h = 4$

$S = \frac{(2+8)}{2} \times 4 = 20$

۰/۵

(۵)

$\tan(\frac{3\pi}{2} + 15) \times \tan(\pi - 15) - \sin(15) \times \cos(\frac{3\pi}{2} - 15) =$

$-\cot x \tan \rightarrow -1 \quad - \sin x - \sin = -1 + \sin^2 15 =$

$-1 + 1 - \cos^2 15 = -\cos^2 15 \rightarrow k = -1$

(۶)

$\sqrt{2} \times -\frac{\sqrt{2}}{2} \times \sin(3\pi/2 - 27) - \sqrt{2} \times \frac{\sqrt{2}}{2} \times \cos(\pi - 27)$

$-\frac{2}{2} \times -\cos + \cos = 1,5 \cos 27 + \cos 27 = 2,5 \cos 27$

Arman

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$$\frac{x \sin^2 4x}{16 \cos^2 4x \times \cos^2 8x \times \cos^2 16x \times \cos^2 32x} = \quad \frac{1}{2}\sin^2 8x \quad \frac{1}{2}\sin^2 16x \quad \frac{1}{2}\sin^2 32x \quad \frac{1}{2}\sin^2 64x$$

A

$$\frac{16 \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \sin^2 64x}{\sin^2 3x} = \frac{\sin^2 64x}{\sin^2 3x} \xrightarrow{\pi/12} \frac{\sin^2 \frac{16\pi}{3}}{\sin^2 \frac{\pi}{12}}$$

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* فرمول طلایی : $\sin^2 \frac{\pi}{12} = \frac{1-\cos \pi/6}{2} = \frac{2-\sqrt{3}}{4}$

$$\rightarrow A = \frac{\frac{3}{4}}{\frac{2-\sqrt{3}}{4}} = \boxed{\frac{3}{2-\sqrt{3}}}$$

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(۹)

$$\frac{\sin\theta}{1-\cos\theta} + \frac{1+\cos\theta}{\sin\theta} = \cot\frac{\theta}{2} + \cot\frac{\theta}{2} \rightarrow 12 = 2$$

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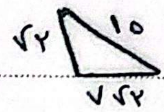
(۱۰)

$\sin\alpha = \frac{\sqrt{2}}{10}$



$\cos\alpha = -7\sqrt{2}$

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$$\cos\left(\frac{3\pi}{2}+\alpha\right) = \cos\frac{3\pi}{2}\cos\alpha - \sin\frac{3\pi}{2}\sin\alpha$$

$$+\frac{\sqrt{x}}{x} \times -7\sqrt{x} - \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{10} = 7 - 10 = -3$$

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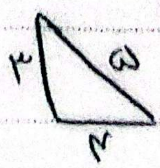
(۸)

$1 - \sin x = 4 + 4\sin x \rightarrow 5\sin x = -3 \rightarrow \sin x = -\frac{3}{5}$

$\cos x = -\frac{4}{5}$



$$\tan\frac{x}{2} = \frac{1+\frac{4}{5}}{-\frac{3}{5}} = \frac{\frac{9}{5}}{-\frac{3}{5}} = \boxed{-3}$$

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$$\tan\alpha + \cot\alpha = \frac{1}{\cos\alpha \sin\alpha} = -3 \rightarrow \cos\alpha \times \sin\alpha = \frac{-1}{3}$$

$$\cos^3\alpha + \sin^3\alpha = (\cos\alpha + \sin\alpha)(\underbrace{\overbrace{\cos^2\alpha + \sin^2\alpha}^{1} - \overbrace{\sin\alpha\cos\alpha}^{-\frac{1}{3}}}_{\frac{4}{3}})$$

★ به توان ۲ $\rightarrow \frac{16}{9} \times (\overbrace{\sin^2\alpha + \cos^2\alpha}^{1} + \underbrace{2\sin\alpha\cos\alpha}_{-\frac{2}{3}}) = \frac{16}{9} \times \frac{1}{3} = \frac{16}{27}$

معکوس $\xrightarrow{1}$ $\frac{27}{16}$ $\xrightarrow[\text{جذر}]{★}$ $-\frac{3\sqrt{3}}{4}$

۱۰)

$$\cos\left(\frac{۱۱\pi}{۴}+\alpha\right) = -\left(\cos\alpha \cos\frac{\pi}{۴} + \sin\alpha \sin\frac{\pi}{۴}\right)$$

$$\rightarrow \frac{-\sqrt{۲}}{۲}\left(\cos\alpha + \sin\alpha\right) \qquad \cos\alpha = \frac{-۷\sqrt{۲}}{۱۰}$$

$$\hookrightarrow \frac{-\sqrt{۲}}{۲}\left(\frac{-۷\sqrt{۲}}{۱۰} + \frac{\sqrt{۲}}{۱۰}\right) = \frac{۳}{۵}$$

۱۱)

$$f\left(\frac{\pi}{۳۶}\right) = ۱۶\cos^{۲}\left(\frac{\pi}{۱۲}\right)\cos^{۲}\left(\frac{\pi}{۶}\right)\cos^{۲}\left(\frac{\pi}{۳}\right)\cos^{۲}\left(\frac{۲\pi}{۳}\right)$$

$$\cos^{۲}\frac{\pi}{۱۲} = \frac{۱+\cos\frac{\pi}{۶}}{۲} = \frac{۲+\sqrt{۳}}{۴}$$

$$\downarrow \quad ۱۶\left(\frac{۲+\sqrt{۳}}{۴}\right) \times \frac{۳}{۴} \times \frac{۱}{۴} \times \frac{۱}{۴}$$

$$= \frac{۳(۲+\sqrt{۳})}{۱۶}$$