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۱۵

$$\frac{a\sin\frac{4\pi}{3} + b\cos\frac{7\pi}{4}}{a\sin\frac{11\pi}{4} + b\cos\frac{\pi}{3}} = \tan\frac{5\pi}{4}$$

$\frac{\pi+\pi}{3}$ $\quad$ $\pi+\frac{\pi}{4}$

$\tan\pi - \frac{\pi}{4}$ $\quad$ $3\pi - \frac{\pi}{4}$

$$\frac{a\left(\frac{-\sqrt{3}}{2}\right) + b\left(-\frac{1}{2}\right)}{a\left(-\frac{\sqrt{3}}{2}\right) + b\left(\frac{\sqrt{3}}{2}\right)} = -\frac{\sqrt{3}}{3}$$

$$\frac{\sqrt{3}(a+b)}{(a-b)} = -\frac{\sqrt{3}}{3}$$

$$-\sqrt{3}\left(a\frac{\sqrt{3}}{2}\right) - \sqrt{3}\left(b\frac{\sqrt{3}}{2}\right) = -\frac{a}{2} - \frac{b}{2}$$

$3a + 3b = b - a$

$b = -2a$

$$\frac{-3a-3b}{2} = \frac{-a-b}{2}$$

$$\frac{b}{a} = -2$$

$\Rightarrow -2a = 2b \Rightarrow -a = b \Rightarrow \frac{b}{a} = -1$

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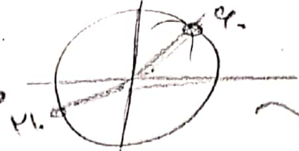
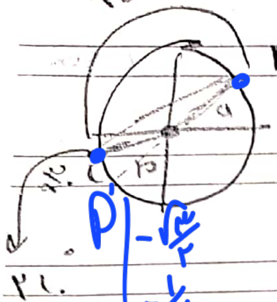
از ۱۸۰ درجه ...





(۱

$210^\circ = 180^\circ + 30^\circ \Rightarrow 150^\circ$

$\theta = 150^\circ$

$P(\frac{1}{2}, y)$, $P = 60^\circ$

$P \left| \begin{matrix} \frac{1}{2} \\ \frac{\sqrt{3}}{2} \end{matrix} \right.$ $P' \left| \begin{matrix} -\frac{\sqrt{3}}{2} \\ -\frac{1}{2} \end{matrix} \right.$

$PP' = \sqrt{\left(\frac{\sqrt{3}}{2} - (-\frac{1}{2})\right)^2 + \left(\frac{1}{2} - (-\frac{\sqrt{3}}{2})\right)^2} = \sqrt{2+\sqrt{3}}$

$S = \frac{1}{2} a b \sin\theta$

محیط $= 1 + 1 + \sqrt{2+\sqrt{3}} = 2 + \sqrt{2+\sqrt{3}}$

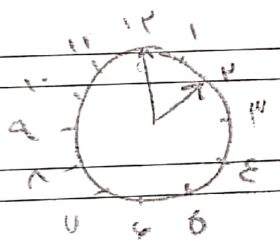
$\frac{1}{2}(1)(1)\sin(150^\circ) =$

$\Rightarrow \frac{1}{2}\left(-\frac{\sqrt{3}}{2}\right) = -\frac{\sqrt{3}}{4}$

$\frac{\sqrt{3}}{4} = \left|-\frac{\sqrt{3}}{4}\right| \Leftarrow S$

۰/۵

(۳



$2\pi =$ دایره کامل

$\frac{\pi}{6}$ هر ساعت $\frac{\pi}{6} = \frac{2\pi}{12} \Leftarrow$

$\frac{\pi}{6} = \frac{9\pi}{54}$

$\frac{\pi}{9} = \frac{6\pi}{54}$

از $\frac{9\pi}{54}$ تا $\frac{6\pi}{54}$ رفته $\frac{2}{3}$

ساعت $2:04 \Leftarrow$

۲

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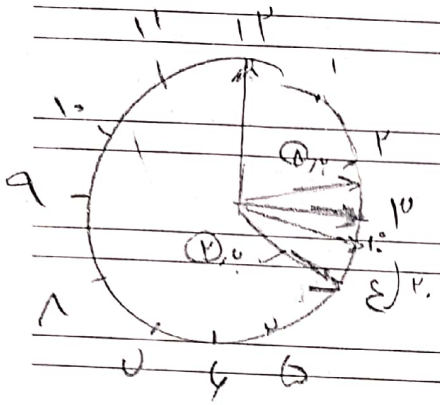

(۴)

$۲۴۰^\circ < ۱۲$

۳۰°

$۲۰ = \left| \frac{۱۱\pi}{۲} - ۳۰(۳) \right|$

۲

$۱۱۰ = \frac{۱۱\pi}{۲}$

$\Rightarrow ۲۲۰ = ۱۱\pi \Rightarrow \pi = \frac{۲۲۰}{۱۱} = ۲۰$

۲۰° رد شد ⟸

(۵)

$\sin\pi = \frac{m-۳}{۵}$

$-\frac{۹\pi}{۶} < \pi < \frac{۵\pi}{۶}$

$-\frac{۱}{۲} < \sin\pi < ۱$

$-\frac{۱}{۲} < \frac{m-۳}{۵} \leq ۱$

$-۲/۵ < m-۳ \leq ۵$

$۱/۵ < m \leq ۸$

۸ عدد صحیح

$\sin = -\frac{\sqrt{۳}}{۲}$

$\sin = ۱$

$\sin = ۰$

$\sin = \frac{\sqrt{۳}}{۲}$

$\sin = -۱$

$-\frac{\sqrt{۳}}{۲} < \sin\pi \leq ۱$

$\hookrightarrow -\frac{\sqrt{۳}}{۲} < \frac{m-۳}{۵} \leq ۱$

$-۵\frac{\sqrt{۳}}{۲} < m-۳ \leq ۵$

$\Rightarrow -۵\frac{\sqrt{۳}+۶}{۲} < m \leq ۸$

(۱)

AVANGE

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$\sin(10)^\circ + K\cos(100)^\circ = 3$

$\cos(140)^\circ + 2\sin(190)$

$\tan 15^\circ = 0.25$

$\Rightarrow \dfrac{\cos 10 - K\sin 10}{-\cos 10 - 2\sin 10} = 3$

$\dfrac{\sin 10}{\cos 10} = \dfrac{25}{100}$

$\dfrac{100 - 25K}{-150} = 3$

$100 - 25K = -450$

$-25K = -550$

$K = \dfrac{550}{25} = 11$

(2)

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تمرین ۲ — sin +

cos —

$1 - \cos 5x = 2 + 2\cos 5x$

$\Rightarrow 3\cos x = -1 \Rightarrow \cos x = -\frac{1}{3}$ ✓

$\Rightarrow \sin x \Rightarrow \left(\frac{1}{9}\right) + \sin^2 x = 1$

$\Rightarrow \sin^2 x = \frac{8}{9} = \frac{2\sqrt{2}}{3}$

$$\frac{\tan\left(\frac{\pi}{2} - x\right) - \cot(\pi - x)}{\cot\left(\frac{3\pi}{2} - x\right) + 2\tan(2\pi - x)}$$

($\cot x$, $+\cot x$, $\tan x$, $-2\tan x$)

$$\Rightarrow \frac{2\cot x}{-\tan x} = \frac{\left(\frac{2\cos x}{\sin x}\right)}{\left(\frac{-\sin x}{\cos x}\right)} = \frac{2\cos^2 x}{-\sin^2 x}$$

$$\frac{\frac{2}{9}}{-\frac{8}{9}} = \frac{2\left(-\frac{1}{3}\right)^2}{-\left(\frac{2\sqrt{2}}{3}\right)^2} = -\frac{1}{4}$$ ✓

(۲)

AVANGE

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$۱۰۸ \times \frac{\pi}{۱۸۰} = \frac{۹\pi}{۱۰} = \frac{۳\pi}{۵}$

$\frac{۳\pi}{۵} R_A = \frac{۹\pi}{۱۰} R_B$

$\Rightarrow \frac{R_A}{R_B} = \frac{\frac{۹\pi}{۱۰}}{\frac{۳\pi}{۵}} = \frac{۹ \times ۵ \pi}{۱۰ \times ۳ \pi} \Rightarrow \frac{۳}{۲}$ ۴

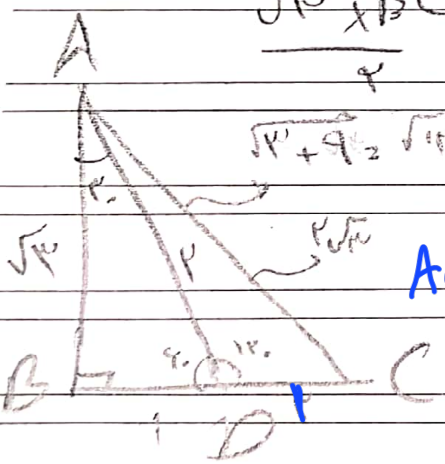
$S = \pi R^۲ \Rightarrow \frac{S_A}{S_B} = \frac{۹}{۴}$ ✓

(۹

$\frac{\sqrt{۳} \times BC}{۲} = \sqrt{۳} \Rightarrow \sqrt{۳} BC = ۲\sqrt{۳} \Rightarrow BC = ۲$

$S_{ABC} = \sqrt{۳}$ $DC = ۱$

۱



$\sqrt{۳ + ۹} = \sqrt{۱۲}$

$\sin ۲C$

$AC = \sqrt{۷}$

$S_{ABC} = S_{ABD} + S_{ADC}$

$\Rightarrow \sqrt{۳} = \frac{\sqrt{۳}}{۲} + S_{ADC}$

$\Rightarrow S_{ADC} = \frac{\sqrt{۳}}{۲}$

$AD = ۲$

$\sin ۲\hat{C} = ۲ \sin\hat{C} \cos\hat{C} = ۲ \times \frac{\sqrt{۳}}{\sqrt{۷}} \times \frac{۲}{\sqrt{۷}} = \frac{۴\sqrt{۳}}{۷}$

$S_{ABD} = \frac{\sqrt{۳}}{۲}$

$\sin C \times \frac{۱}{۲} \times ۲\sqrt{۳} \times ۱ = \frac{\sqrt{۳}}{۲}$

$\Rightarrow \sin C \times ۲\sqrt{۳} = \sqrt{۳}$

$\Rightarrow \sin C = \frac{\frac{\sqrt{۳}}{۲}}{۲\sqrt{۳}} = \frac{\sqrt{۳}}{۴\sqrt{۳}} = \frac{۱}{۴}$

AVANGE

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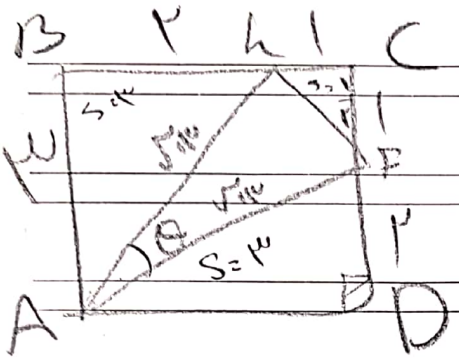

(١٥)

$٣^٢ + ٣^٢ = ٩ + ٩ = ١٨$

$S_{\triangle ABC} = ٩ \Rightarrow \frac{٩}{٣ \times \frac{١}{٢}} = \frac{٩}{٢}$

$S_{ABCD} = \frac{٩}{٢}$

$\Rightarrow \frac{١}{٢} \times ٣ \sin\theta \times \sqrt{١٨} \times \sqrt{١٨} = \frac{٩}{٢}$

$\frac{١}{٢} \times ١٨ \times \sin\theta = \frac{٩}{٢}$

$\sin\theta = \frac{٩}{١٨}$

$\sin\theta = \frac{١}{٢}$ ✓

(٢)