

Subject

Date : Year

Month

Day

11, 15

مسابقات

$$الف) 17^\circ = (x) \text{ rad} \Rightarrow 17 \times \frac{\pi}{180} = \boxed{\frac{17\pi}{180} \text{ rad}}$$

$$ب) 120^\circ = (x) \text{ rad} \Rightarrow 120 \times \frac{\pi}{180} = \boxed{\frac{2\pi}{3} \text{ rad}}$$

$$ج) \frac{5\pi}{12} \text{ rad} = (x)^\circ \Rightarrow \frac{5\pi}{12} \times \frac{180}{\pi} = 5 \times 15 = \boxed{75^\circ}$$

$$د) \frac{5\pi}{9} \text{ rad} = (x)^\circ \Rightarrow \frac{5\pi}{9} \times \frac{180}{\pi} = 5 \times 20 = \boxed{100^\circ}$$

$$100^\circ \quad \frac{120a}{9} \text{ rad} \quad \frac{5\pi}{12} \text{ rad}$$

$$\frac{\frac{120a}{9}}{180} = \frac{x}{180} \Rightarrow \frac{120a}{9 \times 180} = \frac{x}{180} \Rightarrow \frac{5a}{12} = \frac{x}{180}$$

$$\frac{5a \times 180}{12} = x \Rightarrow \frac{120}{12} a = x \Rightarrow 10a = x$$

$$\frac{\frac{5\pi}{12}}{\pi} = \frac{x}{180} \Rightarrow \frac{5}{12} = \frac{x}{180} \Rightarrow \frac{5 \times 180}{12} = x \Rightarrow \frac{900}{12} = x \Rightarrow 75 = x$$

$$10a + 120 + 100 = 180 \quad a(10 + 120 + 100) = 180$$

$$a = \frac{180}{330} \Rightarrow \boxed{a = \frac{3}{11}}$$

الف) $\cos 4. \cos 3. - \sin 4. \sin 3. - \tan 4. + \cot 4.$ - 3

(1, 1)

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

ب) $\frac{\left(\frac{1}{\sqrt{3}}\right)^2 + 1^2 + (\sqrt{3})^2}{\sqrt{3} - \frac{1}{\sqrt{3}}} = \frac{\frac{1}{3} + 1 + 3}{\frac{\sqrt{3}}{3} - \frac{1}{\sqrt{3}}} = \frac{13}{\frac{\sqrt{3}}{3}} = \boxed{\frac{13\sqrt{3}}{3}}$ 5

$-\sin 3. \cos 4. + \cos 3. \sin 4. = \sin \theta$ 10

$\frac{-\frac{1}{2} \cdot \frac{1}{2} + \frac{\sqrt{3}}{2} \cdot \frac{\sqrt{3}}{2}}{\frac{1}{2} \cdot \frac{1}{2} + \frac{\sqrt{3}}{2} \cdot \frac{\sqrt{3}}{2}} = \frac{-\frac{1}{4} + \frac{3}{4}}{\frac{1}{4} + \frac{3}{4}} = \frac{\frac{2}{4}}{\frac{4}{4}} = \frac{1}{2}$

$\sin \theta = \frac{1}{2} \Rightarrow \theta = 30^\circ$

$\tan^2 \theta = \frac{1}{3} \Rightarrow \tan \theta = \pm \frac{1}{\sqrt{3}} = \pm \frac{\sqrt{3}}{3} \Rightarrow \boxed{\tan \theta = + \frac{\sqrt{3}}{3}}$ 15

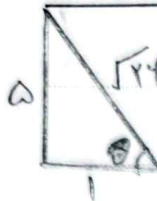
$\tan \theta < 1 \leftarrow \text{بما } \frac{\pi}{2} < \theta < \pi$

$\frac{r \tan 3. (1 - \tan^2 3.)}{(1 - \cot^2 4.)^2} = \frac{r \times \frac{1}{\sqrt{3}} (1 - \frac{1}{3})}{(1 - 3)^2} = \frac{r}{\sqrt{3}} \times \frac{2}{3}$ - 20

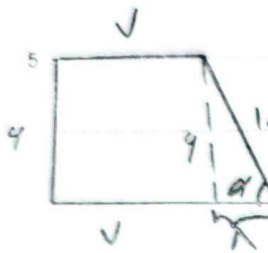
$\Rightarrow \frac{2r\sqrt{3}}{3} = \sqrt{3} = \tan \theta \Rightarrow \boxed{\theta = 4. = \frac{\pi}{3}}$

Subject

Date : Year: Month: Day:

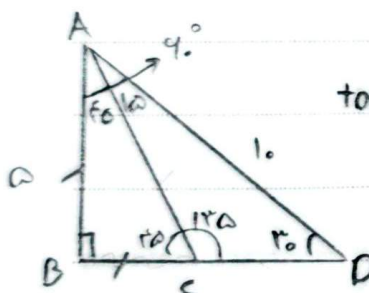

 $\tan \theta = \frac{1}{1} \Rightarrow \frac{\sin}{\cos} \quad 1^2 + 1^2 = 2 \Rightarrow \sqrt{2}$

$\frac{f(1) - 1}{1 - f(1)} = \frac{1 - 1}{1} = 0$


 $\sin \alpha = \frac{4}{10} = \frac{\text{مقابل}}{\text{وتر}}$

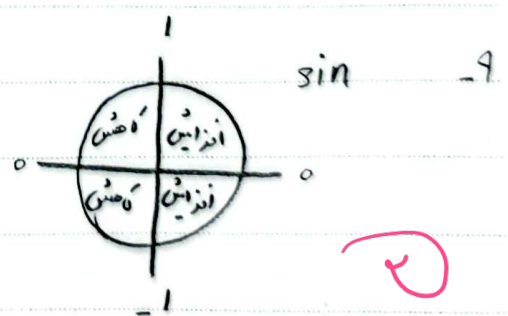
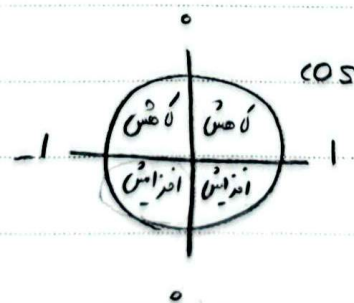
$4^2 + \square = 10^2 \Rightarrow 100 - 16 = 84 = \square$

$10 + 10 + 4 + 4 = \square$


 $\tan A = \frac{BC}{AB} = 1 \Rightarrow BC = AB$

$\frac{\sqrt{3}}{2} \times 10 = 5\sqrt{3}$

$BD - BC = CD \Rightarrow 10 - 5\sqrt{3} = CD \Rightarrow 5(\sqrt{3} - 1) = CD$



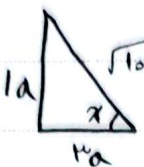
الف) در ربع سوم

ب) در ربع دوم

parsian

Subject

Date : Year: Month: Day:

$$\tan x = \frac{\sin x}{\cos x} = \frac{1}{\sqrt{10}} \quad \text{با مثلث قائم الزاویه} \quad \begin{array}{c} \text{مقابل} \\ \text{جانب مجاور} \end{array} \quad \begin{array}{c} \text{مقابل} \\ \text{جانب مجاور} \end{array} \rightarrow \sin, \cos \rightarrow \text{مقابل} \quad 10$$


$$\sqrt{10}^2 + 1^2 = 10 + 1 = 11 \Rightarrow \sqrt{11}$$

$$\boxed{\sin x = \frac{1}{\sqrt{11}}} \quad \checkmark$$

$$\frac{\tan^2 45^\circ + \tan^2 30^\circ + \tan^2 60^\circ}{\cot^2 45^\circ - \cot^2 30^\circ} = \frac{\frac{1}{3} + 1 + 3}{\sqrt{3} - \frac{\sqrt{3}}{3}} \quad \text{سوال ۳ - ب}$$

$$\frac{\frac{1+3+9}{3}}{\frac{\sqrt{3}\sqrt{3}-\sqrt{3}}{\sqrt{3}}} = \frac{13}{2\sqrt{3}} = \boxed{\frac{13\sqrt{3}}{6}}$$