

۱. $y = \tan(-\pi + \frac{\pi}{2})$ بافتال عدل می کنیم: $(-\frac{\pi}{2}, \frac{\pi}{2})$ $\tan(\alpha)$

$(-\frac{\pi}{2}, \frac{\pi}{2}) \xrightarrow{\text{بافتال عدل}} (-\frac{\pi}{2}, \frac{\pi}{2}) \xrightarrow{x=\frac{1}{2}} (-\frac{\pi}{2}, \frac{\pi}{2}) \rightarrow AC = \frac{\pi}{2} + \frac{\pi}{2} = \pi$

$\alpha = \frac{\pi}{2} \rightarrow B = \tan(\frac{\pi}{2}) \rightarrow B=1$ $AC = \pi$

$S_{ABC} = \frac{\frac{\pi}{2} \times 1}{2} = \frac{\pi}{4}$ جواب: $\frac{\pi}{4}$

۲. $2x^2 - (\sin \alpha)x - \frac{1}{2} \cos \alpha = 0 \xrightarrow{P=x} \frac{15}{9} - \frac{1}{3} \sin \alpha - \frac{1}{2} \cos \alpha = 0$ ۲ را جایگزین می کنیم: $1 < \sin \alpha < 2$

$\rightarrow 14 - 2 \sin \alpha - 9 \cos \alpha = 0 \rightarrow 9 \sin \alpha - 2 \sin \alpha + 14 = 0 \rightarrow (7 \sin \alpha - 14) = 0$ $\frac{14}{9} = \frac{1}{\sin \alpha}$

$1 + \tan \alpha = \frac{1}{\cos \alpha} = \frac{1}{\frac{1}{9}} = 9$ جواب: $\frac{9}{10}$

$\cos \alpha = \frac{1}{9}$ جواب: $\frac{1}{9}$

۳. $\log(\sin \alpha) - \log(-\cos \alpha) = \log 3 \rightarrow \log\left(\frac{\sin \alpha}{-\cos \alpha}\right) = \log 3$ $-\tan \alpha = 3$
 $\tan \alpha = -3$

$\sin \alpha - \cos \alpha = \frac{3}{\sqrt{10}} + \frac{1}{\sqrt{10}} = \frac{4}{\sqrt{10}} = \frac{2\sqrt{10}}{5}$ جواب: $\frac{2\sqrt{10}}{5}$

$\cos \alpha < 0$ $\sin \alpha > 0$ $\alpha > 0$ چون $(\log x)$ باید $\leftarrow$

۴. $\sin^2 \theta + \cos^2 \theta = \frac{2}{5} \rightarrow \sin^2 \theta (\sin^2 \theta - 1) = \frac{1}{5} \rightarrow \sin^2 \theta \cos^2 \theta = \frac{1}{5}$

$\cos^2 \theta + \sin^2 \theta = ? \rightarrow \cos^2 \theta (\cos^2 \theta - 1) + 1 = -\frac{\sin^2 \theta \cos^2 \theta}{1} + 1 = -\frac{1}{5} + 1 = \frac{4}{5}$ جواب: $\frac{4}{5}$

۵. $\sin x \tan x - \frac{1}{\cos x} > 0 \rightarrow \frac{\sin^2 x - 1}{\cos x} > 0 \rightarrow \frac{-\cos^2 x}{\cos x} > 0 \rightarrow \cos x < 0$ منفی

$\frac{3 \sin x + \sin x \cos x}{2(1 - \cos^2 x)} < 0 \rightarrow \frac{\sin x (3 + \cos x)}{2 \sin^2 x} < 0 \rightarrow \sin x < 0$ منفی

جواب: ناحیه سوم

$$\frac{r}{\sin x} + \frac{r}{\cos x} = 0 \rightarrow \frac{r \cos x + r \sin x}{\sin x \cos x} = 0 \rightarrow r \cos x + r \sin x = 0 \rightarrow r + r \tan x = 0$$

$$\tan x + \cot x = -\frac{r}{r} + \frac{-r}{r} = \frac{-8-9}{9} = -\frac{17}{9}$$

$$\tan x = -\frac{r}{r} \quad \cot = -\frac{r}{r}$$

$$-\frac{17}{9} : \text{جواب}$$

$$\frac{\sqrt{1+\sin 20}}{\sin 20 + \sin 10} = \frac{\sqrt{1+\cos 80}}{\sin 20 + \sin 10} = \frac{\sqrt{2} \cos 20}{\sin(10+10) + \sin(10-10)} = \frac{\sqrt{2} \cos 20}{2 \sin 10 \cos 0} = \frac{\sqrt{2} \cos 20}{2 \sin 10}$$

$$\frac{\sqrt{2} \cos 20}{\cos 10} = \sqrt{2} \quad \sqrt{2} = \text{جواب}$$

$$\frac{(1-r \sin^2 20)(r \cos^2 10-1)}{\cos 10} \left(\frac{1-\tan^2 10}{1+\tan^2 10} \right) \times \frac{\sin 10}{\sin 10} = \frac{r \sin 10 \times \cos 20 \times \cos 20}{\sin 10} = \frac{r \cos^2 20}{\sin 10}$$

$$\frac{\frac{1}{2} \sin 20 \times \cos 20}{\sin 10} = \frac{\frac{1}{2} \sin 20}{\sin 10} = \frac{1}{2} \frac{\cos 10}{\sin 10} = \frac{1}{2} \cot 10$$

$$\frac{1}{2} \cot 10 : \text{جواب}$$

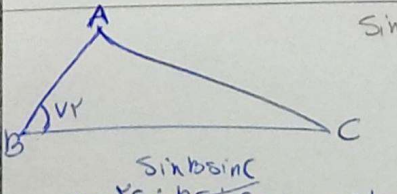
$$\Delta \cos^2 x - 17 \cos x = ? \quad \sin x + 17 \cos x = 1$$

$$\rightarrow \sin x = 1 - 17 \cos x \rightarrow \sin^2 x + \cos^2 x = 1 \rightarrow (1-17 \cos x)^2 + \cos^2 x = 1 \rightarrow 1 - 34 \cos x + 289 \cos^2 x + \cos^2 x = 1$$

$$10 \cos^2 x - 34 \cos x + 17 = 0 \xrightarrow{\Delta \text{ formula}} \cos x = \frac{17 \pm \sqrt{17^2 - 10}}{10} = \frac{17 \pm \sqrt{279}}{10}$$

$$10 \cos^2 x - 34 \cos x + 17 = 0 \xrightarrow{\Delta \text{ formula}} \cos x = \frac{17 \pm \sqrt{17^2 - 10}}{10} = \frac{17 \pm \sqrt{279}}{10}$$

$$10 \cos^2 x - 34 \cos x + 17 = 0 \xrightarrow{\Delta \text{ formula}} \cos x = \frac{17 \pm \sqrt{17^2 - 10}}{10} = \frac{17 \pm \sqrt{279}}{10}$$



$$\sin B \sin C = \cos^2 \frac{A}{2} = \frac{1+\cos A}{2}$$

$$r \sin B \sin C = \frac{1+\cos A}{2} \rightarrow r \sin B \sin C = 1 - (\cos B \cos C - \sin B \sin C)$$

$$1 = \sin B \sin C + \cos B \cos C$$

$$1 = \cos(B-C)$$

$$10 - r(r), 17 \leftarrow r = C = B \neq B = C \leftarrow B-C=0 \leftarrow 1 = \cos(0)$$