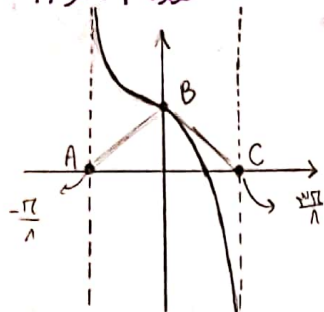


دارمهم دفتر A



پرنیان شمسی - تکلیف شماره ۱۵ (سوال ۱)

$$y = \tan(-2x + \frac{\pi}{4}) \rightarrow B: y = \tan(0 + \frac{\pi}{4}) = 1 \rightarrow B(1)$$

$$C: y = \tan(-2x + \frac{\pi}{4}) = -\infty \rightarrow -2x + \frac{\pi}{4} = -\frac{\pi}{2} \rightarrow 2x = \frac{3\pi}{4} \rightarrow x = \frac{3\pi}{8}$$

$$A: y = \tan(-2x + \frac{\pi}{4}) = +\infty \rightarrow -2x + \frac{\pi}{4} = \frac{\pi}{2} \rightarrow 2x = -\frac{\pi}{4} \rightarrow x = -\frac{\pi}{8}$$

$$\overline{AC} = \frac{3\pi}{8} - (-\frac{\pi}{8}) = \frac{4\pi}{8} = \frac{\pi}{2}$$

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

✓

(سوال ۲)

$$x^2 - (\sin \alpha)x - \frac{1}{x} \cos^2 \alpha = 0 \rightarrow x^2 - (\sin \alpha)x - \frac{1}{x} (1 - \sin^2 \alpha) = 0 \rightarrow x = \frac{1}{\sin \alpha}$$

$$\frac{x}{q} - \frac{y}{p} \sin \alpha - \frac{1}{x} + \frac{\sin^2 \alpha}{x} = 0 \rightarrow \frac{1}{x} \sin^2 \alpha - \frac{y}{p} \sin \alpha + \frac{y}{py} = 0 \rightarrow \sin \alpha = \frac{\frac{y}{p} \pm \sqrt{\frac{x}{q} - \frac{y}{py}}}{\frac{y}{x}} = \frac{\frac{y}{p} \pm \frac{y}{x}}{\frac{y}{x}}$$

$$\left\{ \begin{array}{l} \frac{\frac{y}{p} + \frac{y}{x}}{\frac{y}{x}} = \frac{y}{x} = \frac{1}{y} \text{ و } \sin \alpha = \frac{1}{y} \\ \frac{\frac{y}{p} - \frac{y}{x}}{\frac{y}{x}} = \frac{y}{x} = \frac{1}{y} = \left(\frac{1}{y}\right) \sqrt{0} \end{array} \right. \rightarrow \sin \alpha = \frac{1}{y} \xrightarrow{\sin^2 \alpha + \cos^2 \alpha = 1} \frac{1}{y^2} + \cos^2 \alpha = 1 \rightarrow \cos^2 \alpha = \frac{1}{y^2}$$

$$1 + \tan^2 \alpha = \frac{1}{\cos^2 \alpha} = \frac{1}{\frac{1}{y^2}} = \frac{y^2}{1}$$

✓

(سوال ۳)

$$\log^{\sin \alpha} - \log^{-\cos \alpha} = \log^y \rightarrow \log^{\sin \alpha} + \log^{\frac{-1}{\cos \alpha}} = \log^y \rightarrow \log^{\frac{-\sin \alpha}{\cos \alpha}} = \log^y$$

$$\frac{-\sin \alpha}{\cos \alpha} = y \rightarrow \frac{-\tan \alpha}{\tan \alpha} = y \rightarrow \sin \alpha - \cos \alpha = \cos \alpha (\tan \alpha - 1) \rightarrow \frac{-\sqrt{10}}{10} (-1) = \frac{(\sqrt{10})}{10}$$

$$1 + \tan^2 \alpha = \frac{1}{\cos^2 \alpha} \rightarrow 1 + 9 = \frac{1}{\cos^2 \alpha} \rightarrow \cos^2 \alpha = \frac{1}{10} \rightarrow \cos \alpha = \frac{\sqrt{10}}{10} \text{ و } \cos \alpha = -\frac{\sqrt{10}}{10} \text{ (منفی باشد)}$$

✓

(سوال ۴)

$$\sin^6 \alpha + \cos^2 \alpha = \frac{5}{8} \rightarrow (\sin^2 \alpha + \sin^4 \alpha) + \cos^2 \alpha = \frac{5}{8} \rightarrow (1 - \cos^2 \alpha) + \cos^2 \alpha = \frac{5}{8}$$

$$1 + \cos^6 \alpha - \frac{2 \cos^4 \alpha}{-\cos^2 \alpha} + \cos^2 \alpha = \frac{5}{8} \rightarrow \cos^6 \alpha + 1 - \cos^2 \alpha = \frac{5}{8} \rightarrow \cos^6 \alpha + \sin^2 \alpha = \frac{5}{8}$$

✓

(سوال ۵)

$$\frac{y \sin x + \sin x \cos x}{y - y \cos^2 x} < 0 \rightarrow \frac{\sin x (y + \cos x)}{\sin x + \cos x + \sin^2 x + \cos^2 x - y \cos^2 x} = \frac{\sin x (y + \cos x)}{y \sin^2 x} < 0 \rightarrow \frac{y + \cos x}{y \sin x} < 0$$

$$\rightarrow \sin x < 0 \text{ (I)} \quad \sin x \frac{\sin x}{\cos x} - \frac{1}{\cos x} > 0 \rightarrow \frac{\sin^2 x - 1}{\cos x} > 0 \rightarrow \cos x < 0 \text{ (II)}$$

انتهای که در نهایت استوار قرار دارد

✓

(سوال ۶)

$$\frac{y}{\sin x} + \frac{y}{\cos x} = 0 \rightarrow \frac{y}{\sin x} = -\frac{y}{\cos x} \rightarrow \frac{\sin x}{\cos x} = \tan x = \frac{-y}{y} \rightarrow \cot x = \frac{1}{\tan x} = \frac{-y}{y}$$

$$\rightarrow \tan x + \cot x = \frac{y}{y} + \left(\frac{-y}{y}\right) = \frac{-4 - 9}{4} = \frac{-13}{4}$$

✓

1.5 ✓