بنام خدا

تکلیف ۱۵ — ریاضی دهم پسرانه

۱-

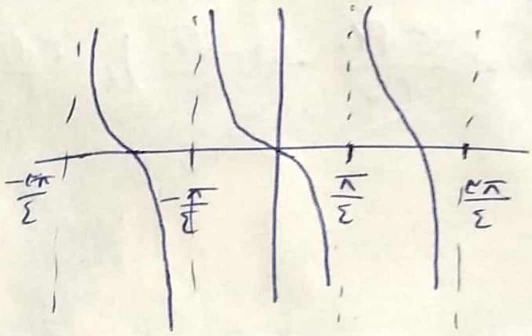
$y = \tan(-2x + \frac{\pi}{4}) = -\tan(2x - \frac{\pi}{4})$

$T = \frac{\pi}{|a|} = \frac{\pi}{2}$

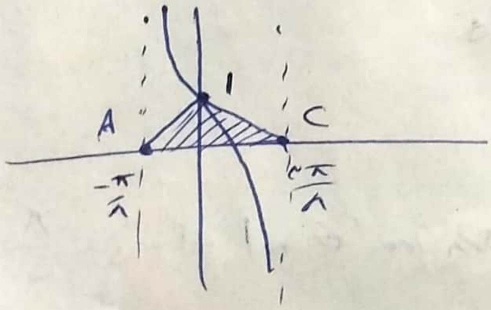
فاصله بین A و C برابر یک دوره تناوب است: $AC = \frac{\pi}{2}$

$f(0) = -\tan(-\frac{\pi}{4}) = 1 \Rightarrow B|$

$S = \frac{\frac{\pi}{2} \times 1}{2} = \boxed{\frac{\pi}{4}}$



$y = -\tan 2(x - \frac{\pi}{8}) = -\tan(2x - \frac{\pi}{4})$



۲-

$x^2 - (\sin\theta)x - \frac{1}{4}\cos^2\theta = 0$

$x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{\sin\theta \pm \sqrt{\sin^2\theta + \cos^2\theta}}{2} = \frac{\sin\theta \pm 1}{2}$

$\Rightarrow \begin{cases} \frac{\sin\theta + 1}{2} = \frac{2}{3} \Rightarrow \boxed{\sin\theta = \frac{1}{3}} \Rightarrow \cos^2\theta = 1 - \sin^2\theta = \frac{8}{9} \\ \frac{\sin\theta - 1}{2} = \frac{2}{3} \Rightarrow \sin\theta = \frac{7}{3} \text{ غ ق ق} \end{cases}$

$\Rightarrow \boxed{1 + \tan^2\theta = \frac{1}{\cos^2\theta} = \frac{9}{8}}$

$\log \sin t - \log(-\cos t) = \log 3$ — ۳

$\Rightarrow \log \frac{-\sin t}{\cos t} = \log 3 \Rightarrow -\frac{\sin t}{\cos t} = 3 \Rightarrow \tan t = -3$

$\sin t > 0$] II

با توجه به دامنه log داریم:

$-\cos t > 0 \Rightarrow \cos t < 0$] I

$\cos^2 t = \frac{1}{1+\tan^2 t} = \frac{1}{10} \overset{I}{\Rightarrow} \cos t = \frac{-\sqrt{10}}{10}$

$\sin^2 t = 1 - \cos^2 t = \frac{9}{10} \overset{II}{\Rightarrow} \sin t = \frac{3\sqrt{10}}{10}$

$\Rightarrow \sin t - \cos t = \frac{3\sqrt{10}}{10} - \left(-\frac{\sqrt{10}}{10}\right) = \frac{4\sqrt{10}}{10} = \frac{2\sqrt{10}}{5}$

$\sin^4\theta + \cos^2\theta = \frac{4}{5}$ — ۴

$\sin^4\theta + 1 - \sin^2\theta = \frac{4}{5} \Rightarrow \sin^4\theta - \sin^2\theta = -\frac{1}{5}$

$\Rightarrow \sin^2\theta(\sin^2\theta - 1) = -\sin^2\theta\cos^2\theta = -\frac{1}{5}$

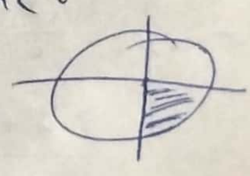
$\Rightarrow \boxed{\sin^2\theta\cos^2\theta = \frac{1}{5}}$

$\cos^4\theta + \sin^2\theta + \underbrace{\sin^4\theta + \cos^2\theta}_{\frac{4}{5}} = 1 - 2\sin^2\theta\cos^2\theta + 1 = 2 - \frac{2}{5} = \frac{8}{5}$

$\Rightarrow \cos^4\theta + \sin^2\theta = \frac{8}{5} - \frac{4}{5} = \frac{4}{5}$

$\frac{3\sin x + \sin x\cos x}{2 - 2\cos^2 x} = \frac{\sin x\overbrace{(3+\cos x)}^{+}}{\underbrace{2\sin^2 x}_{+}} < 0 \Rightarrow \sin x < 0$ — ۵

$(\sin x \neq 0)$



$\sin x \tan x - \frac{1}{\cos x} = \frac{\sin^2 x - 1}{\cos x} = \frac{\overbrace{-\cos^2 x}^{-}}{\cos x} < 0 \Rightarrow \cos x > 0$

ربع چهارم

$$\frac{r}{\sin\alpha} + \frac{r}{\cos\alpha} = \frac{r\cos\alpha + r^2\sin\alpha}{\sin\alpha\cos\alpha} = 0 \Rightarrow r\cos\alpha + r^2\sin\alpha = 0$$

$$r\cos\alpha = -r^2\sin\alpha \Rightarrow \frac{\sin\alpha}{\cos\alpha} = \tan\alpha = \frac{r}{-r}$$

$$\Rightarrow \cot\alpha = -\frac{r}{c}$$

$$\tan\alpha + \cot\alpha = -\frac{r}{r^2} - \frac{r^2}{r} = \frac{-\Sigma - 9}{5} = \frac{-17^2}{5}$$

$$\frac{\sqrt{1+\sin\theta}}{\sin\theta + \sin\theta} = \frac{\sqrt{1+\cos\xi}}{\sin(r^2+r^2) + \sin(r^2-r^2)}$$

$$= \frac{\sqrt{r_2}\cos r^2}{\sin r^2\cos r^2 + \cos r^2\sin r^2 + \sin r^2\cos r^2 - \cos r^2\sin r^2} = \frac{\sqrt{r}\cos r^2}{r\sin r^2\cos r^2}$$

$$= \frac{\sqrt{r}}{r\sin r^2} = \frac{\sqrt{r}}{r\cdot\frac{1}{c}} = \sqrt{r}$$

$$(1 - r\sin^2\theta)(r\cos^2\theta - 1)\left(\frac{1-\tan^2 r^2}{1+\tan^2 r^2}\right)$$

$$= \cos\theta \cdot \cos r^2 \cdot \cos\xi = \frac{\sin\theta\cos\theta\cos r^2\cos r^2}{\sin\theta}$$

$$= \frac{\frac{1}{\lambda}\sin\lambda}{\sin\theta} = \frac{\frac{1}{\lambda}\cos\theta}{\sin\theta} = \frac{1}{\lambda}\cot\theta$$

$$\sin^2 x + r - r\cos x \Rightarrow \sin^2 x + \xi + 9\cos^2 x - 17\cos x + 1 - \cos^2 x$$

$$\Rightarrow 10\cos^2 x - 17\cos x + c = 0 \Rightarrow 10\cos^2 x - 17\cos x - \delta = -\lambda$$

$$A + B + C = \pi \Rightarrow A = \pi - (B+C)$$

$$\delta(r\cos^2 x - 1) - 17\cos x$$

$$= \delta\cos^2 x - 17\cos x = -\lambda$$

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

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

$$\Rightarrow 1 = \sin B\sin C + \cos B\cos C = \cos(B-C) \Rightarrow B - C = 0 \Rightarrow B = C = \forall$$

$$\Rightarrow A = 1\lambda\cdot - 1\xi = r^\circ$$