فاطمه فروتن   تکلیف (۲۸)   یازده دفتر B

موضوع: تاریخ: / /

(۱)

$$\cot = \frac{\cos\alpha}{|\sin\alpha|}$$

$$\frac{1}{|\cos\alpha|} - \frac{1}{\frac{\cos\alpha}{\sin\alpha}} = \frac{1-\sin\alpha}{|\cos\alpha|}$$

$\frac{|\sin\alpha|}{\cos}$ مثبت $\sin \to +$ ، $\cos \to +$

ناحیه‌ی اول

(۲)

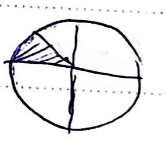
$$-\frac{\pi}{12} < x < \frac{5\pi}{12} \qquad -\frac{\pi}{6} < 2x < \frac{5\pi}{6} \qquad -\frac{1}{2} < \sin 2x \leq 1$$

$$-\frac{1}{2} < \frac{m-1}{4} \leq 1 \qquad -1 < m \leq 5$$

(۳)

$$\tan + \cot = \frac{1}{\sin\cos} = -3 \qquad \cos.\sin = -\frac{1}{3}$$

$$3\pi < x < 4\pi \xrightarrow{\div 4} \frac{3\pi}{4} < x < \pi$$



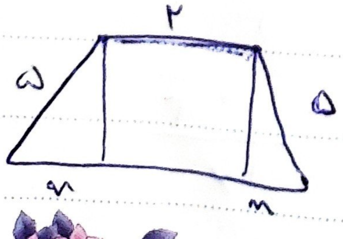
$\to |\cos| > |\sin|$ ①

$$\sin + \cos = \sqrt{\sin^2 + \cos^2 + 2\sin\cos} = \sqrt{1 - \frac{2}{3}} = \frac{1}{\sqrt{3}} \xrightarrow{①} -\frac{1}{\sqrt{3}}$$

$$\frac{1}{\sin^3 + \cos^3} = \frac{1}{(\sin+\cos)(\sin^2+\cos^2-\sin\cos)} = \frac{1}{-\frac{1}{\sqrt{3}} \times \frac{4}{3}}$$

$$= \frac{-3\sqrt{3}}{4}$$

(۴)

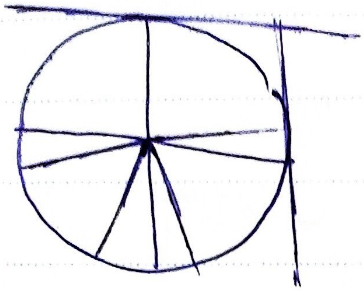


$$\frac{x}{5} = \frac{6}{10} \qquad x = 3$$

$h \to 4$

$$\frac{(8+2)\,4}{2} = 20$$

⑤ $\tan(285)\tan(-165) - \sin(1095)\cos(255)$



$= -\cot(15) \times \tan(15) - (\sin 15 \cdot -\sin 15)$

$-1 + \sin^2 15 = -\cos^2 15$

$-\cos^2 15 = k \cos^2 15$

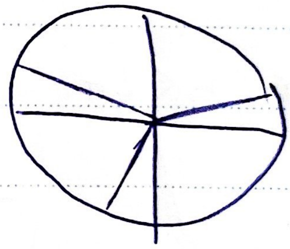
$k = -1$

---

⑥ $\sqrt{3}\cos(210)\sin(243) - \sqrt{2}\sin(225)\cos(153)$

$\sqrt{3} \times -\frac{\sqrt{3}}{2} \times -\cos(27) - (\sqrt{2} \times \frac{\sqrt{2}}{2} \times -\cos(27))$

$\frac{3}{2}\cos(27) + \cos(27) = \frac{5}{2}\cos 27$



---

⑦ $16\cos^2(3x) \times \cos^2(6x) \times \cos^2(12x)\cos^2(24x)$ $\quad x = \frac{\pi}{36}$

$\cos^2(\frac{\pi}{6}) = \frac{3}{4} \quad \cos^2(\frac{\pi}{3}) = \frac{1}{4} \quad \cos^2(\frac{2\pi}{3}) = \frac{1}{4}$

$\cos^2(\frac{\pi}{12}) = \frac{1 - \cos(\frac{\pi}{6})}{2} = \frac{2-\sqrt{3}}{4}$

$16 \times \frac{2-\sqrt{3}}{4} \times \frac{3}{4} \times \frac{1}{4} \times \frac{1}{4} = \frac{6-3\sqrt{3}}{16}$

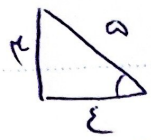
تاریخ / /

موضوع:

(۱) $1 - \sin\alpha = 4 + 4\sin\alpha \rightarrow 5\sin\alpha = -3$

$\sin\alpha = -\frac{3}{5}$

$\tan\alpha = +\frac{3}{4}$ ← ربع ۳



$\frac{3}{4} = \frac{2\tan\frac{\alpha}{2}}{1 - \tan^2\frac{\alpha}{2}}$

$3 - 3\tan^2\frac{\alpha}{2} = 8\tan\frac{\alpha}{2}$

$3\tan^2\frac{\alpha}{2} + 8\tan\frac{\alpha}{2} - 3 = 0 \rightarrow \tan^2\frac{\alpha}{2} + 8\tan\frac{\alpha}{2} - 9$

$\left(\tan + \frac{9}{3}\right)\left(\tan - \frac{1}{3}\right)$

$\tan\frac{\alpha}{2} = -3$ ✗
$\tan\frac{\alpha}{2} = \frac{1}{3}$ ✓

$\frac{\alpha}{2}$ ربع ۱ هست

$\tan \rightarrow +$

---

(۹) $\frac{\sin\theta}{1 - \cos\theta} + \frac{1 + \cos\theta}{\sin\theta} = \frac{1}{\tan\frac{\theta}{2}} + \frac{1}{\tan\frac{\theta}{2}}$

$= 2\cot\frac{\theta}{2} = 4\cot\frac{\theta}{2} \rightarrow 4 = 2$

---

(۱۰) $\cos\left(\frac{11\pi}{4} + \alpha\right) = \cos\left(2\pi + \alpha - \frac{3\pi}{4}\right) = -\sin\left(\alpha - \frac{3\pi}{4}\right)$

$= \sin\left(\frac{\pi}{4} - \alpha\right) = \sin\frac{\pi}{4}\cos\alpha - \cos\frac{\pi}{4}\sin\alpha$

$= \frac{\sqrt{2}}{2} \times \frac{\sqrt{98}}{10} - \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{10} = \frac{14}{20} - \frac{2}{10} = \frac{12}{20}$

$= \frac{3}{5}$

* $\sin^2 + \cos^2 = 1$

$\frac{2}{100} + \cos^2 = 1$

$\cos = \frac{\sqrt{98}}{10}$