تکلیف شماره ۲ — دنیا جمشیدی — ۱۷٫۷۵

① $\sin 150^\circ = \frac{1}{2}$

$S = 2\alpha \cdot 3\alpha \cdot \sin\alpha = \frac{1}{2} \times 6\alpha \times 3\alpha = 9\alpha^2 = 18$

$\alpha^2 = 2 \Rightarrow \alpha = 3\sqrt{2}$

$P = 2(5\alpha) = 10\alpha = 30\sqrt{2}$

② $S_{ABC} = \frac{1}{2} \times 5 \times 7 \times \sin A$

$S_{ADE} = \frac{1}{2} \times 4^2 \times 7 \times \sin A$

$\frac{35}{2}\sin A - 16\sin A = \frac{35 - 28}{2}\sin A$

$= 3.5 \sin A = 1.75$

$\sin A = \frac{1}{2} \xrightarrow{0<A<90} A = 30^\circ$

$\tan A = \tan 30^\circ = \frac{\sqrt{3}}{3}$

③ $\frac{1}{\sqrt{\cos^2\alpha}} - \tan\alpha = \frac{1+\sin\alpha}{|\cos\alpha|}$

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

$\frac{|\sin\alpha|}{\cos\alpha} = -\frac{1}{\cot\alpha} = -\frac{\sin\alpha}{\cos\alpha} \rightarrow \sin\alpha < 0$ (۱)

$\cos\alpha < 0$ (۲)

(۱) و (۲) $\rightarrow$ α در ناحیه سوم

④ $\tan\alpha = -\tan\beta$

$\tan\beta = \frac{3}{6} = \frac{1}{2}$

$\tan\alpha = -\frac{3}{6} = -\frac{1}{2}$

$\tan(\frac{\pi}{2} - \alpha) = \cot\alpha = -2$

s.a.m

$\sin\alpha = 2\cos\alpha \rightarrow \tan\alpha = \frac{\sin\alpha}{\cos\alpha} = 2$ ⑦

α (ربع ثالث)

$\cos\alpha = ?$ $= -\frac{\sqrt{5}}{5}$

$|\cos\alpha| = \frac{1}{\sqrt{5}} = -\frac{\sqrt{5}}{5}$

1,75

$y = \frac{-2m}{m^2-1}x + \frac{3}{m^2-1}$ ⑧

$\tan 45^\circ = \sqrt{3}$

$\frac{-2m}{m^2-1} = \sqrt{3} \quad \sqrt{3}m^2 - \sqrt{3} = -2m$ ⑨

$\sqrt{3}m^2 + 2m - \sqrt{3} = 0$

$\Delta = \frac{\sqrt{\Delta}}{|a|} = \frac{4}{\sqrt{3}}$

$\Delta = 4 - 4(\sqrt{3})(-\sqrt{3}) = 16$

-12

$\frac{3\cos(270^\circ) - 2\sin(180^\circ)}{\sin(270^\circ) - \cos(270^\circ)}$ ⑤

$\frac{3\cos(\frac{3\pi}{2} - 22^\circ) - 2\sin(\pi - 22^\circ)}{\sin(\pi + 22^\circ) - \cos(\frac{3\pi}{2} + 22^\circ)}$

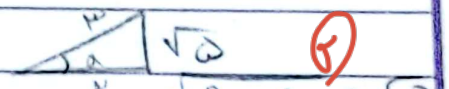
$= \frac{-3\sin\alpha - 2\sin\alpha}{-\sin\alpha - \sin\alpha} = \frac{-5}{-2} = 2.5$

$\frac{\sin(\frac{\pi}{2} + \alpha) - \sin(\alpha - \pi)}{|\tan^2\alpha - 1|}$ ④

$\frac{\cos\alpha + \sin\alpha}{\tan^2\alpha - 1}$

$\cos\alpha = \frac{2}{3}$

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



③

$\tan\alpha = \frac{-\sqrt{5}}{2}$

$\frac{\frac{2}{3} - \frac{\sqrt{5}}{3}}{\frac{5}{9} - 1} = \frac{\frac{2-\sqrt{5}}{3}}{\frac{1}{9}} =$

$4(2-\sqrt{5})$

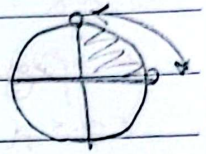
3

s.a.m

⑨

$$-\frac{\pi}{4} < x < \frac{\pi}{3}$$

$$\tan\left(\frac{\pi}{4} - x\right) = \frac{1-m}{m+2}$$



$$-\frac{\pi}{4} < -x < \frac{\pi}{4} \quad \xrightarrow{+\frac{\pi}{4}} \quad 0 < \frac{\pi}{4} - x < \frac{\pi}{2}$$

$$0 < \tan < 1 \qquad 0 < \frac{1-m}{m+2} < 1$$

$$\frac{1-m}{m+2} > 0 \qquad \frac{1-m}{m+2} < 1$$

	-2		1
$1-m$	$+$	$+$	$-$
$m+2$	$-$	$+$	$+$

$$\frac{1-m-m-2}{m+2} = \frac{-2m-1}{m+2} < 0$$

	-2		$-\frac{1}{2}$
$-2m-1$	$+$	$+$	$-$
$m+2$	$-$	$+$	$+$

$$m \in \emptyset$$

$$-\frac{\pi}{4} < x < \frac{\pi}{4} \longrightarrow 0 < x - \frac{\pi}{4} < \frac{\pi}{2}$$

کمان در ربع اول است ← تانژانت ⊕ ← $\frac{1-m}{2+m} > 0 \Rightarrow m \in (-2, 1)$

s.a.m

⑩

$$\tan(300^\circ)\cos(-210^\circ) + \tan(-240^\circ)\left(\sin(-60^\circ)\right)^2$$

$$-\sqrt{3} \qquad -\frac{\sqrt{3}}{2}$$

$$= \frac{3}{2} + \left(-\frac{3}{2}\right) = 0$$