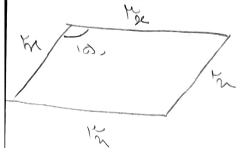
نام و نام خانوادگی: کیمیا رحیمی — شماره تکلیف 26 — گروه یازدهم دختر A

1

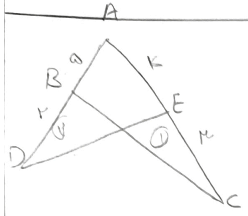


$$S = 3x \times 2x \times \sin 150 = 3x^2$$

$$3x^2 = 54 \Rightarrow x^2 = 18 \rightarrow x = \sqrt{18}$$

محیط $= 2(5x) = 10\sqrt{18} = 30\sqrt{2}$

2



$$S_1 = 5 \times 7 \times \frac{1}{2} \times \sin A = \frac{35}{2}\sin A$$

$$S_2 = \cancel{4}^{2} \times 7 \times \frac{1}{\cancel{2}} \times \sin A = 14\sin A$$

$$\frac{35}{2}\sin A - \frac{28}{2}\sin A = 1.75$$

$$\frac{7}{2}\sin A = \frac{7}{4} \Rightarrow \hat{A} = 30^\circ \qquad \tan A = \frac{\sqrt{3}}{3}$$

3

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

چون کسینوس ($\cos\alpha$) در قدر مطلق قرار گرفته علامت مثبت را به منفی تبدیل کرده پس منفی بوده است

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

چون فقط $\sin\alpha$ درون قدرمطلق است و طرف دوم عبارت منفی شده است پس سینوس منفی بوده است

$\cos\alpha < 0$, $\sin\alpha < 0$ → $\boxed{\text{ناحیه سوم}}$

4

$(2,0)$, $(0,1.5)$ → $y = ax + b$

$0 = 2a + b$, $1.5 = b$ ⇒ $-2a = 1.5$ ⇒ $a = -\frac{3}{4} = \tan a$

$$\tan\left(\frac{\pi}{2} - a\right) = -\cot a = -\frac{4}{3}$$

زاویه باز است — ناحیه چهارم

5

$$\frac{3\cos(248) - 2\sin(158)}{\sin(202) - \cos(292)} = \frac{3\cos(270-22) - 2\sin(180-22)}{\sin(180+22) - \cos(270+22)} = \frac{-3\sin(22) - 2\sin(22)}{-\sin(22) - \sin(22)}$$

$$\frac{-5\sin(22)}{-2\sin(22)} = \frac{5}{2}$$

(6)

$$\frac{\cos a + \sin a}{|\tan^2 a - 1|} = \frac{\frac{2}{3} + \frac{\sqrt{5}}{3}}{\frac{5}{4} - 1} = \frac{\frac{2+\sqrt{5}}{3}}{\frac{1}{4}} = \boxed{\frac{8 + 4\sqrt{5}}{3}}$$

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

$\sin^2 a \to 1 - \frac{4}{9} = \frac{5}{9} \to \sin a = -\frac{\sqrt{5}}{3}$ $\quad \tan^2 a = \frac{\frac{5}{9}}{\frac{4}{9}} = +\frac{5}{4}$

(7)

$\sin a = 2\cos a \longrightarrow \frac{\sin a}{\cos a} = 2 \longrightarrow \tan a = 2$

$1 + \tan^2 a = \frac{1}{\cos^2 a} \Rightarrow 1 + 4 = \frac{1}{\cos^2 a} \Rightarrow \cos a = -\frac{\sqrt{5}}{5}$

(8)

$2mx - 4 = -(m^2 - 1)y \Rightarrow \frac{-2m}{m^2 - 1} = \sqrt{3} \Rightarrow -2m = \sqrt{3}m^2 - \sqrt{3}$

$\tan = 60$ $\quad \sqrt{3}m^2 + 2m - \sqrt{3} = 0 \Rightarrow \Delta = 4 - 4(\sqrt{3})(-\sqrt{3}) = 16$

$m_1 = \frac{-2+4}{2\sqrt{3}} = \frac{2}{2\sqrt{3}} = \frac{1}{\sqrt{3}}$

$m_2 = \frac{-2-4}{2\sqrt{3}} = \frac{-6}{2\sqrt{3}} = \frac{-3}{\sqrt{3}}$

$|m_1 - m_2| = \left|\frac{1}{\sqrt{3}} + \frac{3}{\sqrt{3}}\right| = \frac{4}{\sqrt{3}} = \frac{4\sqrt{3}}{3}$

(9)

$\tan\left(\frac{\pi}{4} - x\right) = \cot x = \frac{1-m}{2+m} \Rightarrow \frac{1-m}{2+m} > 0$ همواره مثبت

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

$\Rightarrow (-2, 1)$

(10)

$\tan(360 - 60)\cos(180 + 30) + \tan(360 + 120)\sin(4 \times 180 + 120)$

$\Rightarrow \tan(60) \cdot \cos(30) + \tan(120) \cdot \sin(120) = -\sqrt{3} \times -\frac{\sqrt{3}}{2} + -\sqrt{3} \times -\frac{\sqrt{3}}{2} = 3$