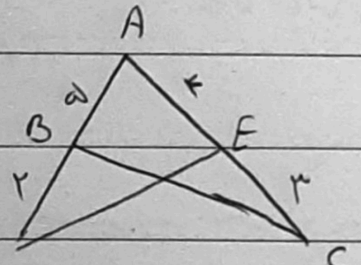
(۱

۳x
۲x — α , sin α = ۰٫۶

$S = ab\sin\alpha = \frac{3}{4}x^2 \times \frac{1}{2} = 24 \Rightarrow x = \sqrt{16}$

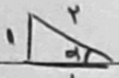
$M = 10x = 10\sqrt{16} = 40\sqrt{2}$]

(۲



$S_{ABC} - S_{ADE} = \frac{1}{2}(5 \times 7 \times \sin\hat{A} - 4 \times 7 \times \sin\hat{A}) = \frac{7}{2}$

$\rightsquigarrow \frac{(25-28)}{7}\sin\alpha = \frac{7}{2} \Rightarrow \sin\alpha = \frac{1}{2}$



$\rightarrow$ فیثاغورس : $4 - 1 = x^2 \Rightarrow x = \sqrt{3}$

$\tan\alpha = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$]

(۳

$\frac{|\sin\alpha|}{\cos\alpha} = -\frac{1}{\cot\alpha} \rightsquigarrow \frac{|\sin\alpha|}{\cos\alpha} = -\frac{\sin\alpha}{\cos\alpha} \Rightarrow \sin\alpha > 0$

$\cos\alpha \leftrightarrow \cos\alpha$ ← قرینه

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

★ $\cos\alpha < 0$ ← ⊖

$\Rightarrow \sin\alpha > 0 \ , \ \cos\alpha < 0 \rightarrow$ ربع دوم

(۴

$| \frac{2}{4}, \frac{2}{0} \rightarrow m = \frac{0 - \frac{3}{2}}{2 - 0} = -\frac{3}{4} = \tan\alpha$

$\tan(\frac{\pi}{2} - \alpha) = \cot\alpha = -\frac{4}{3}$]

(۵

$\cos 2\theta \rightarrow \cos(180 + 42) = -\cos 42 = \sin 22$

$\sin 158 \rightarrow \sin(180 - 22) = \sin 22$

$\sin(\pi + x) \rightarrow \sin(180 + 22) = -\sin 22$

$\cos(99^\circ) \rightarrow \cos(270 - 90) = \cos 90$

$\rightarrow \frac{-2\sin 22 - 2\sin 22}{-\sin 22 - \sin 22}$

$= +\frac{5}{2}$]

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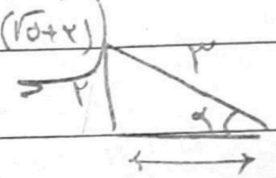
(۶

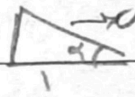
$\frac{\cos\alpha + \sin\alpha}{\left|\frac{\sin^2\alpha - \cos^2\alpha}{\cos^2\alpha}\right|} = \frac{\frac{\sqrt{a}+2}{3}}{\left|\frac{a}{9} - \frac{4}{9}\right|} = \frac{\frac{\sqrt{a}+2}{3}}{\left|\frac{1}{a}\right|} = \frac{a}{3}(\sqrt{a}+2)$



مثلثاتی: $\sqrt{9-4} = \sqrt{a}$

(۷

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



مثلثاتی: $\sqrt{a+1} = \sqrt{5}$

$\cos\alpha = \frac{\text{مجاور}}{\text{وتر}} = \frac{1}{\sqrt{5}}$ مخرج گویا $\rightarrow \frac{\sqrt{5}}{5}$

(۸

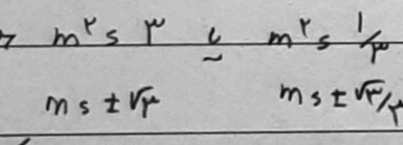
$\tan 45^\circ = \sqrt{3} \quad y = \frac{-2m}{m^2-1}x + \frac{3}{m^2-1}$

$\frac{-2m}{m^2-1} = \sqrt{3} \rightarrow \frac{4m^2}{m^4-2m^2-1} = 3 \rightarrow m^2 = 3a \rightarrow 3a^2 - 9a - 3 = 24$

$\rightarrow 3a^2 - 10a - 3 = 0 \xrightarrow{\div 3} a^2 - 10a - 9 = 0 \rightarrow (a-9)(a-1) = 0$

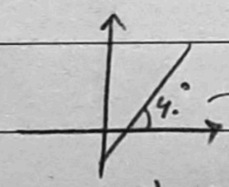
$\Rightarrow m^2 = 3$ یا $m^2 = \frac{1}{3}$

$m = \pm\sqrt{3}$ $\quad m = \pm\frac{\sqrt{3}}{3}$



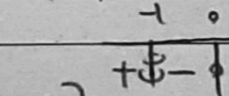
نامنفی

$m = -\sqrt{3}, m = \frac{\sqrt{3}}{3}$



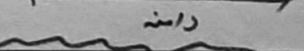
شیب مثبت

$\frac{-2m}{m^2-1} > 0$



$\frac{-2m}{(m-1)(m+1)} > 0$

$0 < m < 1$ یا $m < -1$



دلخواه

اشتراک $\rightarrow \frac{\sqrt{3}}{3} - (-\sqrt{3}) = \frac{\sqrt{3}+3\sqrt{3}}{3} = \frac{4\sqrt{3}}{3}$

(۹

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

$\rightarrow 2+m-2\tan x - m\tan x = 1+\tan x - m - m\tan x \rightarrow 2m = 3\tan x - 1$

$m = \frac{3\tan x - 1}{2}$

$\rightarrow x \in \left(-\frac{\pi}{4}, \frac{\pi}{4}\right) \Rightarrow \tan x \in (-1, 1) \Rightarrow m \in (-2, 1)$

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$\tan 300 = \tan(360 - 60) = -\tan 60 = -\sqrt{3}$

$\cos 210 = \cos(180 + 30) = -\cos 30 = -\frac{\sqrt{3}}{2}$

$\tan(240) = \tan(270 - 30) = \tan 30 = \frac{\sqrt{3}}{3}$

$\sin 840 = \sin(720 + 120) = \sin 120 = \frac{1}{2}$

$\rightarrow \frac{3}{2} - \frac{3}{2} = 0$

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پاسخ تشریحی

پاسخ تشریحی سوال ۲۶