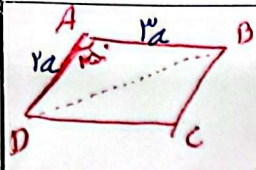


نام و نام خانوادگی سید علی بهرامی پاسخنامه تشریحی تکلیف شماره ۲۹... کلاس ... بازرجم بهرگز ده



$$S_{ABCD} = 2S_{\triangle ABD} = 2 \times \frac{1}{2} \times AD \times AB \times \sin \hat{A} = 2 \times \frac{1}{2} \times 2a \times 2a \times \frac{1}{2} = 2a^2 = 52$$

$$\Rightarrow a^2 = 13 \Rightarrow a = \sqrt{13}$$

$$\left. \begin{matrix} AD=BC \\ AB=DC \\ \hat{A}=\hat{C}=15^\circ \end{matrix} \right\} \Rightarrow \triangle ABD \cong \triangle BCD \Rightarrow S_{\triangle ABD} = S_{\triangle BCD} \Rightarrow S_{ABCD} = 2S_{\triangle ABD}$$

مساحت متوازی الاضلاع = $2(2a \cdot 2a) = 10a = 20\sqrt{13}$ ✓

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$$\left. \begin{matrix} S_{\triangle ABC} = \frac{1}{2} AB \times AC \times \sin \hat{A} = \frac{1}{2} \times 5 \times \sqrt{2} \times \sin \hat{A} = \frac{5\sqrt{2}}{2} \sin \hat{A} \\ S_{\triangle ADE} = \frac{1}{2} AE \times AD \times \sin \hat{A} = \frac{1}{2} \times 2 \times \sqrt{2} \times \sin \hat{A} = \frac{\sqrt{2}}{2} \sin \hat{A} \end{matrix} \right\} \Rightarrow |S_{\triangle ABC} - S_{\triangle ADE}| = \left| \frac{5\sqrt{2}}{2} \sin \hat{A} \right| = 1, \sqrt{2}$$

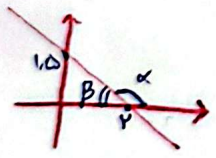
$$\Rightarrow \begin{cases} \sin \hat{A} = \frac{1}{5} \Rightarrow \hat{A} = 3.6^\circ \checkmark \\ \sin \hat{A} = \frac{1}{\sqrt{2}} \Rightarrow \hat{A} = 45^\circ \checkmark \end{cases} \quad \hat{A} = 3.6^\circ \Rightarrow \tan \hat{A} = \frac{\sqrt{2}}{5} \checkmark$$

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

$$\Rightarrow \left. \begin{matrix} \frac{\sin \alpha}{|\cos \alpha|} = \frac{\sin \alpha}{-\cos \alpha} \Rightarrow |\cos \alpha| = -\cos \alpha \Rightarrow \cos \alpha < 0 \\ \frac{|\sin \alpha|}{\cos \alpha} = -\tan \alpha = \frac{-\sin \alpha}{\cos \alpha} \Rightarrow \sin \alpha < 0 \end{matrix} \right\} \Rightarrow \alpha \text{ در ناحیه سوم مثلثاتی قرار دارد}$$

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$$\left. \begin{matrix} \tan \beta = \frac{1 \cdot 5}{\sqrt{2}} = \frac{5}{\sqrt{2}} \\ \beta = \pi - \alpha \end{matrix} \right\} \Rightarrow \tan(\pi - \alpha) = \frac{5}{\sqrt{2}} \Rightarrow \tan \alpha = -\frac{5}{\sqrt{2}}$$

$$\tan\left(\frac{\pi}{2} - \alpha\right) = \cot \alpha = \frac{1}{\tan \alpha} = \frac{1}{-\frac{5}{\sqrt{2}}} = -\frac{\sqrt{2}}{5} \checkmark$$

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$$\frac{3 \cos\left(\frac{3\pi}{4} - 2\gamma\right) - 2 \sin(\pi - 2\gamma)}{\sin(\pi + 2\gamma) - \cos\left(\frac{3\pi}{4} + 2\gamma\right)} = \frac{-3 \sin 2\gamma - 2 \sin 2\gamma}{-\sin 2\gamma - \sin 2\gamma} = \frac{-5 \sin 2\gamma}{-2 \sin 2\gamma} = \frac{5}{2} \checkmark$$

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$$\frac{\sin(\frac{\pi}{4} + \alpha) - \sin(\alpha - \pi)}{|\tan \alpha - 1|} = \frac{\cos \alpha + \sin \alpha}{|\tan \alpha - 1|} = \frac{\frac{1}{\sqrt{2}} - \frac{\sqrt{2}}{2}}{|\frac{1}{\sqrt{2}} - 1|} = \frac{\frac{1 - \sqrt{2}}{\sqrt{2}}}{\frac{1}{\sqrt{2}}} = \frac{1 - \sqrt{2}}{1} = 1 - \sqrt{2} \checkmark$$

(2)
6

$$\cos \alpha = \frac{1}{\sqrt{2}} \Rightarrow \cos^2 \alpha = \frac{1}{2} \Rightarrow \sin^2 \alpha = 1 - \frac{1}{2} = \frac{1}{2} \Rightarrow \sin \alpha = \pm \frac{\sqrt{2}}{2} \Rightarrow \sin \alpha = \frac{\sqrt{2}}{2} \Rightarrow \sin \alpha = \frac{\sqrt{2}}{2}$$

$$\Rightarrow \tan \alpha = \frac{\sin \alpha}{\cos \alpha} = \frac{\frac{\sqrt{2}}{2}}{\frac{1}{\sqrt{2}}} = \frac{\sqrt{2}}{2} \cdot \frac{\sqrt{2}}{1} = 1 \checkmark$$

$$\sin \alpha = r \cos \alpha \Rightarrow \tan \alpha = r \Rightarrow 1 + \tan^2 \alpha = \frac{1}{\cos^2 \alpha} = \Delta \Rightarrow \cos^2 \alpha = \frac{1}{\Delta} \Rightarrow \cos \alpha = \pm \frac{\sqrt{\Delta}}{\Delta}$$

$\Rightarrow \cos \alpha = \frac{-\sqrt{\Delta}}{\Delta} \checkmark$

(2)
7

$$r m x + (m^2 - 1)y = r \Rightarrow y = \frac{-r m}{m^2 - 1} x + \frac{r}{m^2 - 1}$$

(2)
8

$$\text{مقطع} = \tan \theta = \sqrt{3} \Rightarrow \frac{-r m}{m^2 - 1} = \sqrt{3} \Rightarrow \sqrt{3} m^2 - \sqrt{3} = -r m \Rightarrow \sqrt{3} m^2 + r m - \sqrt{3} = 0$$

$$\text{اختلاف مقادير } m = \frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{r^2 + 12}}{\sqrt{3}} = \frac{r}{\sqrt{3}} = \frac{r \sqrt{3}}{3} \checkmark$$

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

$$\Rightarrow \frac{r}{1 + \tan x} = \frac{r}{1 + m} \Rightarrow \frac{1 + \tan x}{r} = \frac{1 + m}{r} \Rightarrow 1 + \tan x = \frac{1 + m}{r} \Rightarrow \tan x = \frac{m}{r}$$

$\Rightarrow -1 < \frac{m}{r} < 1$

$$\Rightarrow -r < m < r \Rightarrow -r < m < r \Rightarrow -r < m < r \checkmark$$

(2)
9

$$\tan(\pi/4) \cos(\pi/4) + \tan(\pi/4) \sin(\pi/4) = \tan(\pi/4) \cos(\pi/4) + \tan(\pi/4) \sin(\pi/4)$$

(2)
10

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