

$$\left(\frac{\sqrt{y}}{y} - \frac{\sqrt{w}}{y}\right)\left(\frac{\sqrt{y}}{y} + \frac{\sqrt{w}}{y}\right) = \frac{y}{y^2} - \frac{w}{y^2} = -\frac{1}{y} \quad \checkmark$$

(الف)

(۱، ۵)

$$\frac{1 + y\left(\frac{1}{\sqrt{w}}\right)^2}{y\left(\frac{w}{y}\right) + y\left(\frac{y}{y}\right)} = \frac{1 + \cancel{\sqrt{w}}}{w + 1} = \boxed{\frac{1}{y}}$$

(ب)

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if $BH, AH = a \rightarrow a\sqrt{y} = \sqrt{y} \Rightarrow a = \sqrt{y}$

$$AC^2 = AH^2 + HC^2 \Rightarrow 1y = y + HC^2 \Rightarrow HC = \sqrt{y} \quad \checkmark$$

(الف)

(۲)

$$\cot 30^\circ = \frac{CH}{AH} \Rightarrow \sqrt{y} = \frac{a}{AH} \Rightarrow AH = \frac{a}{\sqrt{y}}$$

(ب)

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$$\cos \hat{B} = \frac{AH}{AB} = \frac{\frac{a}{\sqrt{y}}}{\frac{a}{\sqrt{y}}} = \frac{\sqrt{y}}{y} \Rightarrow \hat{B} = 60^\circ \quad \checkmark$$

$$\cot 30^\circ = \frac{BC}{AB} \Rightarrow \sqrt{y} = \frac{BC}{a\sqrt{y}} \Rightarrow BC = 100$$

$$\cot 40^\circ = \frac{BD}{AB} \Rightarrow \frac{1}{\sqrt{y}} = \frac{BD}{a\sqrt{y}} \Rightarrow BD = 100$$

(الف)

(۲)

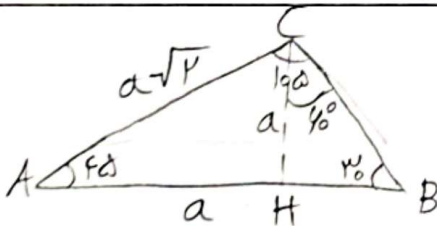
۳

$$\tan \hat{A} = \tan 30^\circ = \frac{BC}{AB} \Rightarrow \sqrt{y} = \frac{BC}{y} \Rightarrow BC = y\sqrt{y}$$

(ب)

(۲)

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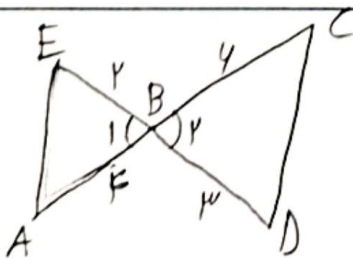
if $AH, CH = a \rightarrow AC = a\sqrt{y}$

$$\cot 30^\circ = \frac{BH}{CH} \Rightarrow \sqrt{y} = \frac{BH}{a} \Rightarrow BH = a\sqrt{y}$$

$$\frac{AB}{AC} = \frac{a\sqrt{y} + a}{a\sqrt{y}} = \frac{a(\sqrt{y} + 1)}{a\sqrt{y}} = \frac{\sqrt{y} + 1}{\sqrt{y}} \quad \checkmark$$

(۲)

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$$\hat{B}_1 = \hat{B}_2 \Rightarrow \sin \hat{B}_1 = \sin \hat{B}_2$$

$$\frac{S_{ABE}}{S_{BCD}} = \frac{\frac{1}{2} \times y \times y \times \sin \hat{B}_1}{\frac{1}{2} \times y \times y \times \sin \hat{B}_2} = \frac{y}{y} \quad \checkmark$$

(۲)

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$$S = ab \cdot \sin \alpha = 3 \times 4 \times \underbrace{\sin 110^\circ}_{\frac{\sqrt{3}}{2}} = 4\sqrt{3} \checkmark$$

(الف)

(2)

$$S_{\text{ج}} = 4 S_{\text{مربع}} = 4 \left(\frac{1}{2} \times 3 \times \frac{3}{2} \times \frac{\sqrt{3}}{2} \right) = 3\sqrt{3} \checkmark$$

(ب)

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$$\tan \theta = \text{نسب خط} = \frac{F-1}{3-(-1)} = \frac{1}{4}$$

(2)

$$\frac{1}{\cos^2 \theta} = \tan^2 \theta + 1 \Rightarrow \cos^2 \theta = \frac{F}{a} \xrightarrow{\cos \theta > 0} \cos \theta = \frac{1}{\sqrt{a}} = \frac{1\sqrt{a}}{a} \checkmark$$

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$$L_1: \text{خط } y = x + 1/a \Rightarrow \tan \alpha = 1 \Rightarrow \alpha = 45^\circ \text{ (1)}$$

(2)

$$\text{(1)} \rightarrow \theta = 110^\circ \Rightarrow \tan \theta = m = -\sqrt{3} \text{ و } b = 1/a = \frac{a}{1}$$

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زاویه خط با محور

$$mb = -\frac{a\sqrt{3}}{1} \checkmark$$

$$f\left(\frac{a\pi}{4}\right) = \cos\left(\frac{11\pi}{4}\right) + \sin\left(-\frac{1\pi}{4}\right) - \tan\left(\frac{\pi}{4}\right) \Rightarrow$$

(2)

$$f\left(\frac{a\pi}{4}\right) = \frac{\sqrt{3}}{2} - \frac{\sqrt{3}}{2} - \sqrt{3} = -\sqrt{3} \checkmark$$

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$$\frac{\sin\left(\frac{\pi}{4} + x\right) + \cos\left(\frac{3\pi}{4} - x\right)}{\cos(\pi + x) - \sin(-x)} = \frac{\cos x - \sin x}{-\cos x + \sin x} = -1 \checkmark$$

(2)

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