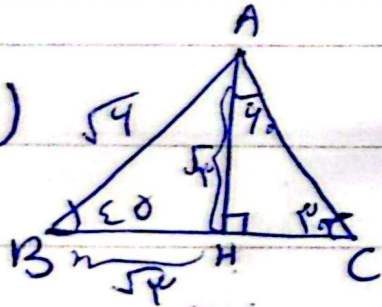


نام خانوادگی: خانم زهرا جمال زاده کلاس: دهم دختر A تلفن شماره: ۲۰

$$(1) \quad (\sin 135^\circ + \sin 45^\circ) (\cos 135^\circ - \cos 45^\circ) = \left(\frac{\sqrt{2} - \sqrt{2}}{2} \right) \left(\frac{\sqrt{2} + \sqrt{2}}{2} \right) = \frac{-1}{2}$$

$$(2) \quad \frac{1 + 3 \tan^2 45^\circ}{4 \cos^2 45^\circ + 2 \cos^2 45^\circ} = \frac{1 + 3 \left(\frac{\sqrt{2}}{2} \right)^2}{4 \left(\frac{\sqrt{2}}{2} \right)^2 + 2 \left(\frac{\sqrt{2}}{2} \right)^2} = \frac{1 + 1}{2 + 1} = \frac{2}{3} = \frac{1}{1.5}$$

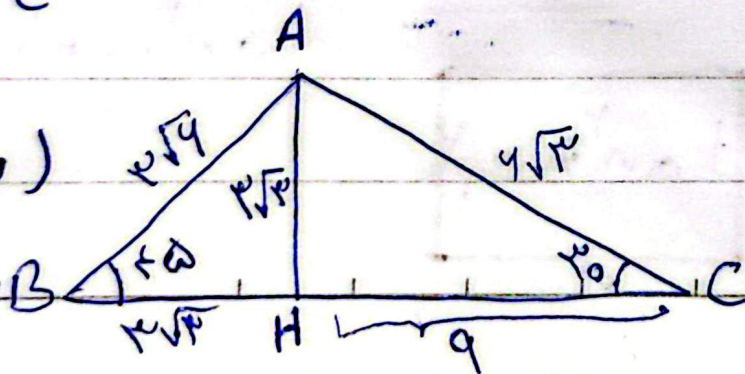


$$HC = 2\sqrt{3} \times \frac{\sqrt{3}}{2} = 3$$

(2)

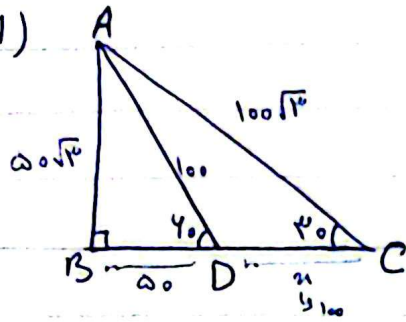
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A S H T A G



$$\hat{B} = 45^\circ$$

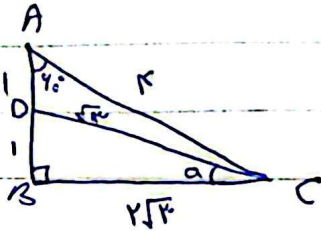
(الف)



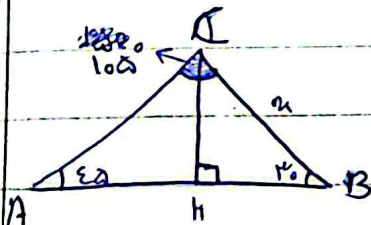
$$BC = 100\sqrt{3} \times \frac{\sqrt{3}}{4} = 150 \Rightarrow \boxed{AC = 100}$$

(٢)

(ب)



$$\sin \alpha = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$



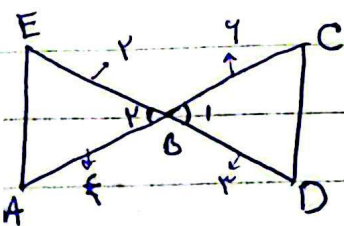
$$AC = \sqrt{\frac{x^2}{r} \times r} = \frac{x}{r} \sqrt{r}$$

$$AB = \frac{x}{r} + \frac{x\sqrt{r}}{r} = \frac{x(1+\sqrt{r})}{r}$$

$$\Rightarrow \frac{AB}{AC} = \frac{x(1+\sqrt{r})}{r} \times \frac{r}{x\sqrt{r}}$$

$$= \frac{1+\sqrt{r}}{\sqrt{r}} \times \frac{\sqrt{r}}{\sqrt{r}} = \frac{\sqrt{r}+\sqrt{r}}{r}$$

(ك)



$$\hat{B}_1 = \hat{B}_2 \rightarrow \sin B_1 = \sin B_2$$

(د)

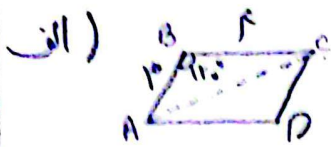
$$S_{ABE} = \frac{1}{2} \times 4 \times 7 \times \sin B_1 = 14 \sin B_1$$

$$S_{BCD} = \frac{1}{2} \times 4 \times 9 \times \sin B_1 = 18 \sin B_1$$

$$\Rightarrow \frac{S_{ABE}}{S_{BCD}} = \frac{14}{18} = \frac{7}{9}$$

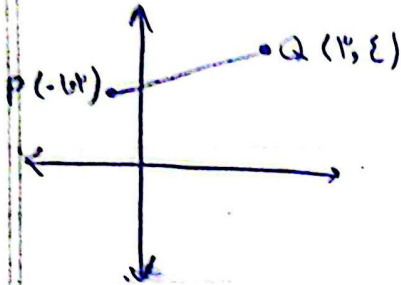
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$$S_{ABCD} = r \times \left(\frac{1}{r} \times r \times \sin 120^\circ \right) = \frac{1 \times \sqrt{3}}{2} = \boxed{\frac{\sqrt{3}}{2}}$$

(4)

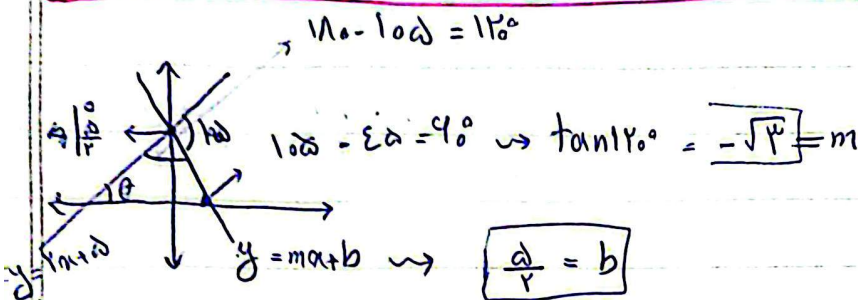


$$\tan \alpha = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2 - 1}{1 - (-1)} = \frac{1}{2}$$

$$\tan^2 \alpha + 1 = \frac{1}{\cos^2 \alpha} \Rightarrow \frac{1}{4} + 1 = \frac{1}{\cos^2 \alpha}$$

$$\frac{5}{4} = \frac{1}{\cos^2 \alpha} \Rightarrow \cos \alpha = \frac{2}{\sqrt{5}} = \boxed{\frac{2\sqrt{5}}{5}}$$

(V)



$$110^\circ - 100^\circ = 10^\circ$$

$$100^\circ - 90^\circ = 10^\circ \Rightarrow \tan 10^\circ = \frac{1}{\sqrt{3}} = m$$

$$\frac{a}{r} = b$$

$$\Rightarrow mb = \frac{-\sqrt{3}r}{r}$$

(A)

$$y = x + \frac{a}{\sqrt{3}} \Rightarrow \tan \theta = 1 \rightarrow \theta = 45^\circ \checkmark$$

$$\theta = 135^\circ \text{ or } 225^\circ$$

(9)

$$f(m) = \cos(\pi + m) + \sin\left(\frac{\pi}{2} - m\right) - \tan\left(\frac{\pi}{4} + m\right) = -\cos m + \cos m + \cot m = \cot m$$

$$f\left(\frac{\omega\pi}{4}\right) = \cot \frac{\omega\pi}{4} = \cot \frac{\pi}{2} = \boxed{\frac{\sqrt{3}}{2}}$$

$$\frac{\sin\left(\frac{11\pi}{4} + m\right) + \cos\left(\frac{11\pi}{4} - m\right)}{\cos\left(\frac{11\pi}{4} + m\right) - \sin\left(\frac{11\pi}{4} - m\right)} = \frac{+\cos m + \sin m}{-\cos m + \sin m}$$

(10)

Hashtag

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