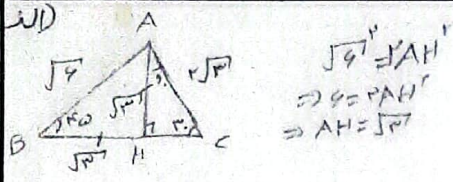


$$\text{الف)} (\sin 135^\circ + \sin 45^\circ)(\cos 135^\circ - \cos 45^\circ) = \left(\frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2}\right) \left(\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}\right) = \left(\frac{\sqrt{2}}{2}\right)^2 - \left(\frac{\sqrt{2}}{2}\right)^2 = \frac{2}{4} - \frac{2}{4} = -\frac{1}{2} \quad \checkmark$$

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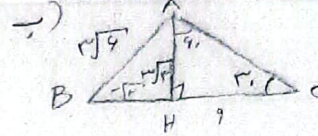
$$\text{ب)} \frac{1 + \tan^2 \theta}{\sec^2 \theta + \sec^2 \theta} = \frac{1 + \left(\frac{\sqrt{3}}{2}\right)^2}{\sec^2 \theta + \left(\frac{\sqrt{3}}{2}\right)^2} = \frac{1 + 1}{2 + 1} = \frac{2}{3} = \frac{1}{\frac{3}{2}} \quad \checkmark$$



$$\sqrt{3} = AH \Rightarrow \angle C = \angle PAH \Rightarrow AH = \sqrt{3}$$

$$\frac{\sqrt{3}}{1} = \frac{\sqrt{3}}{\sin C} \Rightarrow \sin C = \frac{1}{2} \Rightarrow C = 30^\circ$$

$$\frac{\sqrt{3}}{1} = \frac{HC}{\frac{\sqrt{3}}{2}} \Rightarrow HC = 3 \quad \checkmark$$



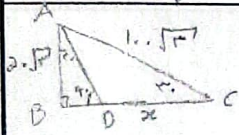
$$\frac{9}{\sqrt{3}} = \frac{AH}{\frac{1}{2}} \Rightarrow AH = 3\sqrt{3}$$

$$(2\sqrt{3})^2 = (2\sqrt{3})^2 + BH^2 \Rightarrow 2r + BH^2 = 0 \Rightarrow BH = 3\sqrt{3}$$

$$AH = BH \Rightarrow A = B \quad \left. \begin{array}{l} A + B + 90 = 180 \\ B = 45^\circ \end{array} \right\} \quad \checkmark$$

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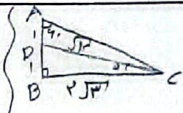
$$\frac{AC}{1} = \frac{2\sqrt{3}}{\frac{1}{2}} \Rightarrow AC = 4\sqrt{3}$$

$$(4\sqrt{3})^2 = (2\sqrt{3})^2 + BC^2$$

$$48 = 12 + BC^2 \Rightarrow BC^2 = 36 \Rightarrow BC = 6$$

$$\frac{BD}{\frac{1}{2}} = \frac{2\sqrt{3}}{\frac{\sqrt{3}}{2}} \Rightarrow BD = 2$$

$$\left. \begin{array}{l} BC = 6 \\ BD = 2 \end{array} \right\} \Rightarrow x = 6 - 2 = 4 \quad \checkmark$$



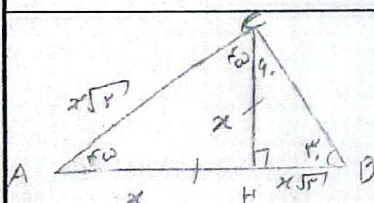
$$\frac{1}{2} = \frac{BC}{\frac{\sqrt{3}}{2}} \Rightarrow BC = 2\sqrt{3}$$

$$(1)^2 + (2\sqrt{3})^2 = 1 + 12 = 13 = DC^2 \Rightarrow DC = \sqrt{13}$$

$$\frac{\sqrt{13}}{1} = \frac{1}{\sin \alpha} \Rightarrow \sin \alpha = \frac{1}{\sqrt{13}} \quad \checkmark$$

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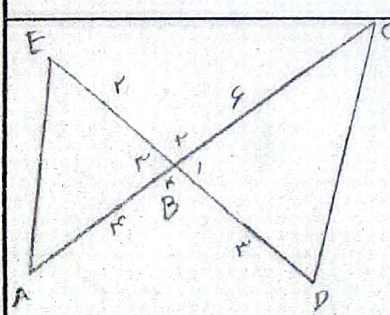


$$\frac{AB}{AC} = \frac{x + 2\sqrt{3}}{2\sqrt{3}} = \frac{x(1 + \sqrt{3})}{2\sqrt{3}} = \frac{1 + \sqrt{3}}{\sqrt{3}} \quad \checkmark$$

$$\frac{x}{\frac{1}{2}} = \frac{AB}{\frac{\sqrt{3}}{2}} \Rightarrow AB = x\sqrt{3}$$

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$$\left. \begin{array}{l} \angle B_1 + \angle B_2 = 180^\circ \\ \angle B_2 + \angle B_3 = 180^\circ \end{array} \right\} \Rightarrow B_1 = B_3$$

$$\frac{S_{ABC}}{S_{ADC}} = \frac{\frac{1}{2} \times 1 \times 1 \times \sin B_1}{\frac{1}{2} \times 1 \times 1 \times \sin B_3} = \frac{1}{1} = \frac{1}{1} \quad \checkmark$$

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$$s = r \times \frac{1}{r} \times r \times \underbrace{\sin 12^\circ}_{\frac{\sqrt{3}}{2}} = 9\sqrt{3}$$

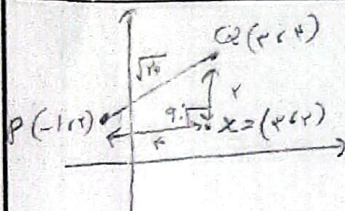


$$S = \left(r \times \frac{1}{r} \times r \times \frac{1}{\omega} \times \sin \theta \right) + \left(r \times \frac{1}{r} \times r \times \frac{1}{\omega} \times \sin \theta \right) = r \sqrt{r}$$

$$s = \frac{1}{F} \times F \times F \times \sin 14. = 3 \sqrt{3}$$

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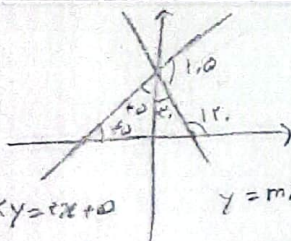


$$S_{QPx} = \frac{1}{5} \times 70 \times 1 = 14$$

$$\cos p = \cos \theta = \frac{r}{\sqrt{r^2}} = \frac{r}{\sqrt{\omega}} = \frac{r\sqrt{\omega}}{\omega}$$

2

Y



$$\Rightarrow y = x + 1/10$$

$$\Rightarrow y = -\sqrt{r}x + \frac{1}{\sqrt{r}}$$

$$\Rightarrow mb = -\sqrt{r} \times r/\omega = -\frac{r}{\omega} \sqrt{r} \quad \checkmark$$

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$$f(x) = \cos\left(\pi + x\right) + \sin\left(\frac{\pi}{r} - x\right) - \tan\left(\frac{r\pi}{r} + x\right) = -\cos x + \cos x + \cot x = \cot x$$

$$\Rightarrow f\left(\frac{\omega\pi}{9}\right) = \cot_{10} = -\sqrt{3} \quad \checkmark$$

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$$\frac{\sin\left(\frac{14\pi}{9} + x\right) + \cos\left(\frac{10\pi}{9} - x\right)}{\cos(3\pi + x) - \sin(4\pi - x)} = \frac{-\sin x}{-\cos x + \sin x} = -1$$

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