

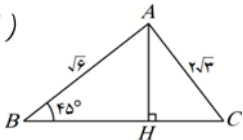
نام و نام خانوادگی علی جمشیدیان پاسخنامه تشریحی تکلیف شماره ۲۰۰ کلاس پسر A

$$\text{الف)} \left(\sin 135^\circ + \sin 30^\circ \right) \left(\cos 315^\circ - \cos 15^\circ \right) = \left(\frac{\sqrt{2}}{2} - \frac{\sqrt{3}}{2} \right) \left(\frac{\sqrt{3}}{2} + \frac{\sqrt{2}}{2} \right) = \frac{2}{4} - \frac{3}{4} = -\frac{1}{4}$$

$$\text{ب)} \frac{1 + 3 \tan^2 21^\circ}{4 \cos^2 33^\circ + 2 \cos^2 225^\circ} = \frac{1 + 3 \times \left(\frac{-\frac{1}{\sqrt{3}}}{-\frac{\sqrt{3}}{2}} \right)^2}{4 \times \frac{3}{4} + 2 \times \frac{1}{4}} = \frac{2}{4} = \frac{1}{2}$$

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الف)

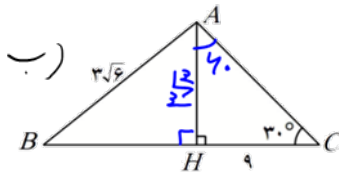


$$\hat{B} = 45^\circ \Rightarrow AH = BH$$

$$\Rightarrow \sqrt{6}^2 = 4 \Rightarrow AH = BH = \sqrt{3}$$

$$\sqrt{3}^2 + HC^2 = (\sqrt{6})^2 \Rightarrow HC = 3$$

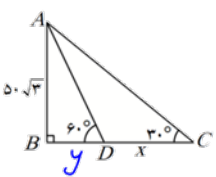
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$$\cot 30^\circ = \sqrt{3} = \frac{HC}{AH} = \frac{9}{AH} \Rightarrow AH = \frac{9}{\sqrt{3}} = 3\sqrt{3}$$

$$\Rightarrow \sin B = \frac{3\sqrt{3}}{3\sqrt{6}} = \sqrt{\frac{1}{2}} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2} \Rightarrow \hat{B} = 45^\circ$$

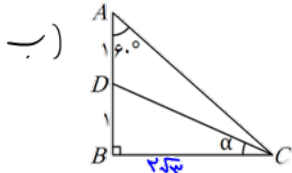
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$$\cot 30^\circ = \frac{BC}{AB} = \frac{x+y}{5\sqrt{3}} = \sqrt{3} \Rightarrow x+y = 15$$

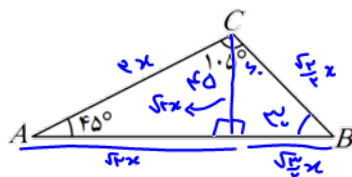
$$\cot 60^\circ = \frac{BD}{AB} = \frac{y}{5\sqrt{3}} = \frac{1}{\sqrt{3}} \Rightarrow y = 5 \Rightarrow x = 15 - 5 = 10$$

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$$\cot 45^\circ = \frac{AB}{BC} = \frac{2}{BC} = \frac{1}{\sqrt{3}} \Rightarrow BC = 2\sqrt{3}$$

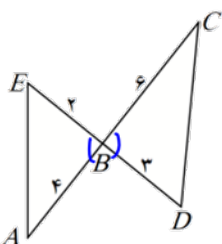
$$DC^2 = BC^2 + DB^2 = 12 + 1 = 13 \Rightarrow DC = \sqrt{13} \Rightarrow \sin \alpha = \frac{1}{\sqrt{13}}$$



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

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

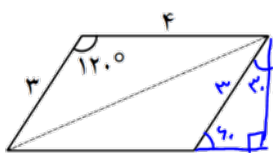
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$$\frac{\sin B' \times \frac{1}{2} \times 2 \times 6}{\sin B' \times \frac{1}{2} \times 3 \times 6} = \frac{1}{12} = \frac{1}{9}$$

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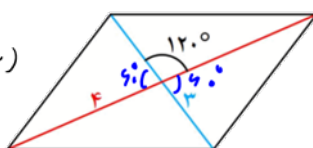
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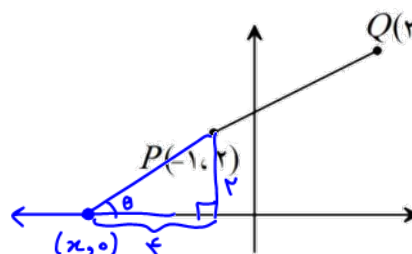
$$\cos 120^\circ = \frac{\sqrt{3}}{4} = \frac{x}{4} \Rightarrow x = \frac{4\sqrt{3}}{2} \Rightarrow S = 4 \times \frac{4\sqrt{3}}{2} = 8\sqrt{3}$$

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ب)



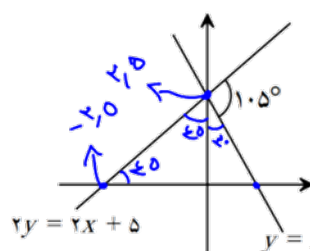
$$3 \times 4 \times \sin 120^\circ = 8\sqrt{3}$$



$$1^2 + 2^2 = 5 \rightarrow \cos \theta = \frac{4}{\sqrt{5}} = \sqrt{\frac{16}{5}} = \sqrt{\frac{4}{5}} = \frac{2}{\sqrt{5}}$$

$4 \rightarrow 2 = 2 \rightarrow -1$
 $2 \rightarrow 0 = -1 \rightarrow -2$

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$y = 2x + 5$
 $y = mx + b$

$$\cos 105^\circ = \frac{2 \cdot 0}{x} = \sqrt{5} \Rightarrow x = \frac{2 \cdot 0}{\sqrt{5}} \Rightarrow m \times \frac{2 \cdot 0}{\sqrt{5}} + 2 \cdot 0 = 0 \Rightarrow m = -\sqrt{5}$$

$b = 2 \cdot 0$
 $\Rightarrow mb = -2 \cdot 0 \sqrt{5}$

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$$f\left(\frac{5\pi}{9}\right) = \cos\left(\frac{11\pi}{9}\right) + \sin\left(-\frac{2\pi}{9}\right) - \tan\left(\frac{2\pi}{9}\right) = \frac{\sqrt{3}}{2} + \left(-\frac{\sqrt{3}}{2}\right) - \sqrt{3} = -\sqrt{3}$$

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

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