

۲۰ آفرین!

شماره تکلیف: ۲۰

نام: امیرمین
مادر: مازوین

الف) $(\sin 135^\circ + \sin 30^\circ)(\cos 315^\circ - \cos 180^\circ) =$

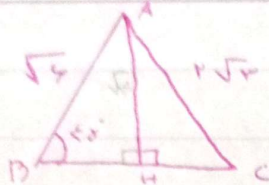
$$\left(\frac{\sqrt{2}}{2} + \frac{1}{2}\right)\left(\frac{\sqrt{2}}{2} - \left(-\frac{1}{2}\right)\right) = \frac{\sqrt{2} + \sqrt{2}}{2} \times \frac{\sqrt{2} + \sqrt{2}}{2} = \frac{2 + 2}{2} = 2$$

ب) $\frac{1 + 3 \tan^2 45^\circ}{4 \cos^2 45^\circ + 2 \cos^2 225^\circ} = \frac{1 + 3\left(\frac{\sqrt{2}}{2}\right)^2}{4\left(\frac{\sqrt{2}}{2}\right)^2 + 2\left(-\frac{\sqrt{2}}{2}\right)^2} = \frac{1 + 3 \times \frac{2}{4}}{4 \times \frac{2}{4} + 2 \times \frac{2}{4}} = \frac{1 + 1.5}{2 + 1} = \frac{2.5}{3} = \frac{5}{6}$

سوال ۱

۲

BD
who am I?



$$\sin 45^\circ = \frac{BC}{AC} = \frac{\sqrt{2}}{2\sqrt{2}} = \frac{1}{2}$$

$$\Rightarrow 45^\circ = \sin^{-1}\left(\frac{1}{2}\right) \Rightarrow 45^\circ = \frac{1}{2} \times 90^\circ = 45^\circ$$

$$(2\sqrt{2})^2 - (\sqrt{2})^2 = AC^2$$

$$12 - 2 = AC^2 \Rightarrow AC^2 = 10 \Rightarrow AC = \sqrt{10}$$

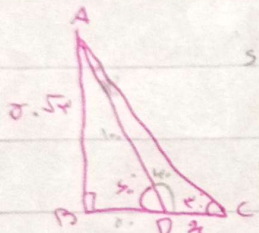
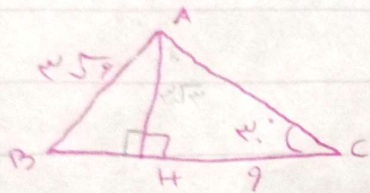
$$\tan 30^\circ = \frac{BC}{AB} = \frac{\sqrt{2}}{AB} = \frac{1}{\sqrt{3}} \Rightarrow AB = \sqrt{2} \times \sqrt{3} = \sqrt{6}$$

$$\sin B = \frac{AC}{AB} = \frac{\sqrt{10}}{\sqrt{6}} = \frac{\sqrt{15}}{3} \Rightarrow B = 48^\circ$$

Hc=?

سوال ۲

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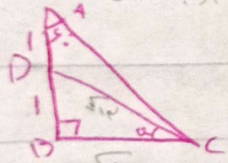
$$\sin 50^\circ = \frac{BC}{AC} = \frac{80\sqrt{2}}{100} = \frac{4\sqrt{2}}{5} \Rightarrow AC = 100$$

$$100^2 - (80\sqrt{2})^2 = BD^2$$

$$10000 - 12800 = BD^2 \Rightarrow BD^2 = 2800 \Rightarrow BD = \sqrt{2800} = 52.91$$

$$\tan 30^\circ = \frac{BC}{AB} = \frac{80\sqrt{2}}{AB} = \frac{1}{\sqrt{3}} \Rightarrow AB = 80\sqrt{2} \times \sqrt{3} = 80\sqrt{6}$$

$$100 = \frac{AB}{\sin 50^\circ} \Rightarrow AB = 100 \times \sin 50^\circ = 100 \times \frac{4\sqrt{2}}{5} = 80\sqrt{2}$$



$$\cot 50^\circ = \frac{1}{\tan 50^\circ} = \frac{1}{\frac{4\sqrt{2}}{5}} = \frac{5}{4\sqrt{2}} = \frac{5\sqrt{2}}{8}$$

$$1 + \sqrt{13} = 2 \Rightarrow 1 + 12 = 2^2 \Rightarrow 2^2 = 13 \Rightarrow 2 = \sqrt{13}$$

$$\sin \alpha = \frac{1}{\sqrt{13}} = \frac{\sqrt{13}}{13}$$

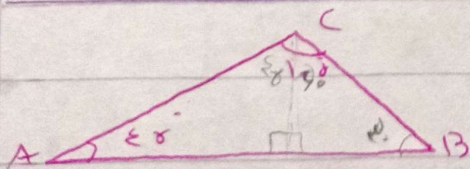
سوال ۳

۲

سوال ۴

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AB/AC = ?



$$\frac{CB}{\sin 40^\circ} = \frac{AC}{\sin 50^\circ} = \frac{AB}{\sin 90^\circ}$$

$$\sin 40^\circ \times \cos 50^\circ + \sin 50^\circ \times \cos 40^\circ = \frac{\sqrt{2}}{2} \times \frac{1}{2} + \frac{\sqrt{2}}{2} \times \frac{1}{2} = \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} = \frac{\sqrt{2} + \sqrt{2}}{2} = \frac{2\sqrt{2}}{2} = \sqrt{2}$$

$$\frac{CB}{\frac{\sqrt{2}}{2}} = \frac{AC}{\frac{1}{2}} = \frac{AB}{1}$$

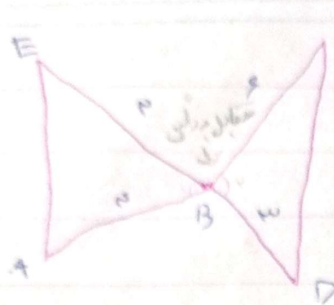
$$\frac{\sqrt{2} + \sqrt{2}}{2} AC = \frac{1}{2} AB \Rightarrow \frac{AB}{AC} = \frac{\sqrt{2} + \sqrt{2}}{\frac{1}{2}} = \frac{2(\sqrt{2} + \sqrt{2})}{1} = 4(\sqrt{2} + \sqrt{2}) = 8\sqrt{2}$$

برگه امتحانی

نام و نام خانوادگی:

تاریخ:

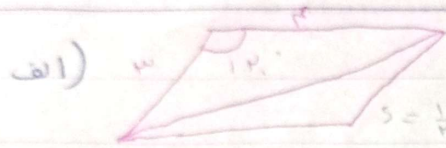
نام:



$$\frac{S_{APB}}{S_{BPD}} = \frac{AP \sin \theta}{PD \sin \theta} = \frac{4}{9}$$

سوال ۵

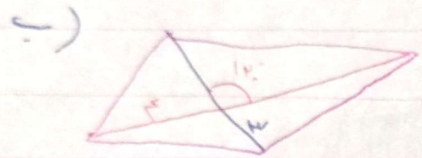
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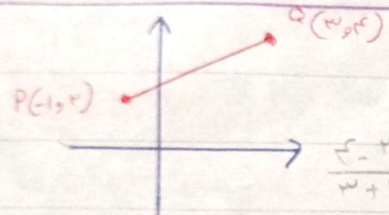
$$S = \frac{1}{2} ab \sin \theta = \frac{1}{2} \times 12 \times 5 = 30$$

سوال ۶

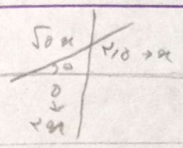
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$$S = \frac{1}{2} ab \sin \theta = \frac{1}{2} \times 12 \times 5 = 30$$



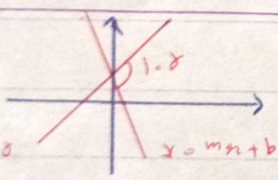
$$\frac{y-2}{x-1} = \frac{1}{2} \Rightarrow y = \frac{1}{2}x + \frac{3}{2}$$



$$\cos \theta = \frac{3}{5} \Rightarrow \theta = \cos^{-1} \left(\frac{3}{5} \right)$$

سوال ۷

(۲)



$$m = \tan \theta = 1$$

$$b = 0$$

$$m = \tan \theta = 1$$

$$mb = \frac{0}{1} \times 1 = 0$$

سوال ۸

(۲)

$$\cos \left(\frac{\pi}{4} + \frac{\pi}{4} \right) + \sin \left(\frac{\pi}{4} - \frac{\pi}{4} \right) - \tan \left(\frac{\pi}{4} + \frac{\pi}{4} \right) = 0$$

سوال ۹

(۲)

$$\frac{\cos \theta + \sin \theta}{-\cos \theta + \sin \theta} = \frac{-(-\cos \theta + \sin \theta)}{(-\cos \theta + \sin \theta)} = -1$$

سوال ۱۰

(۲)