

۱۸/۱۷/۵۵

تاریخ زهراسیفی دهم (خبر) A تکلیف سری ۲۰

سوال ۱

$$\frac{(\sin 135^\circ + \sin 30^\circ)(\cos 115^\circ - \cos 15^\circ)}{(\frac{\sqrt{2}}{2} - \frac{\sqrt{3}}{2}) \times (\frac{\sqrt{2}}{2} - (-\frac{\sqrt{3}}{2}))} = \frac{1}{2} - \frac{3}{2} = -\frac{1}{2}$$

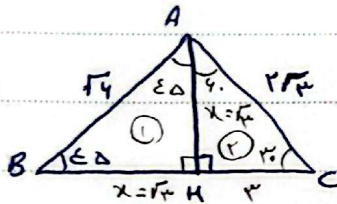
$$\frac{(\frac{\sqrt{2}}{2} - \frac{\sqrt{3}}{2}) \times (\frac{\sqrt{2}}{2} + \frac{\sqrt{3}}{2})}{(\frac{\sqrt{2}}{2} - \frac{\sqrt{3}}{2}) \times (\frac{\sqrt{2}}{2} + \frac{\sqrt{3}}{2})}$$

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$$\frac{1 + 3 \tan^2 210^\circ}{4 \cos^2 225^\circ + 2 \cos^2 225^\circ} = \frac{1 + (3 \times \frac{1}{3})}{(4 \times \frac{1}{2}) + (2 \times \frac{1}{2})} = \frac{2}{3} = \frac{1}{1.5}$$

سوال ۲

الف)

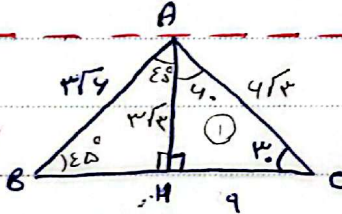


① $x \times x^2 = x^3 \Rightarrow x = \sqrt[3]{3}$

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

$\sin 40^\circ = \frac{\sqrt{3}}{2} \times AC \Rightarrow \frac{\sqrt{3}}{2} \times 4\sqrt{3} = 3 = HC$

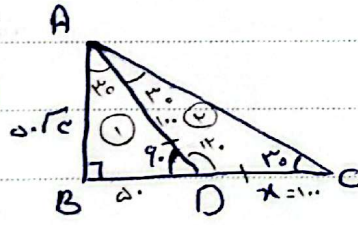
الف)



① $\sin 40^\circ = \frac{\sqrt{3}}{2} \rightarrow \frac{\sqrt{3}}{2} \times AC = 4 \Rightarrow AC = 4\sqrt{3}$

$\sin B = \frac{4\sqrt{3}}{4\sqrt{4}} = \frac{\sqrt{3}}{2} = \frac{\sqrt{3}}{2} \Rightarrow \hat{B} = 45^\circ$

الف)

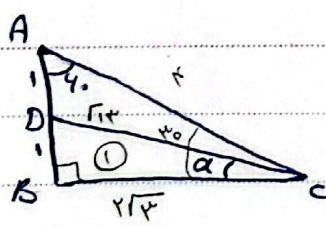


① $\sin 40^\circ = \frac{\sqrt{2}}{2} \times AD = 5 \times \frac{\sqrt{2}}{2} \Rightarrow AD = 10$

② $\hat{A} = \hat{C} \Rightarrow AD = DC = 10$

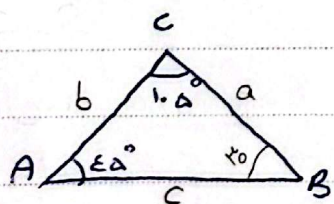
سوال ۳

الف)



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

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



$\frac{\sin B}{b} = \frac{\sin A}{a} = \frac{\sin C}{c}$

$\frac{1}{b} = \frac{\sqrt{2}}{a} = \frac{\sin C}{c}$

$a = \sqrt{2}b$

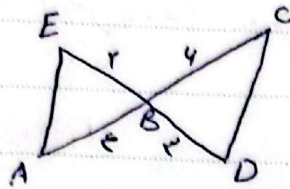
$b = \frac{a}{\sqrt{2}}$

$c = b \sin C \sin(45 + 15)$

$\rightarrow \sin 45 \cos 15 + \sin 15 \cos 45$

$\leftarrow \frac{\sqrt{2}}{2} \times \frac{\sqrt{3}}{2} + \frac{\sqrt{2}}{2} \times \frac{1}{2}$

سوال ۴

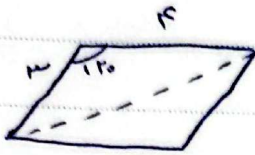


$$\frac{S_{\triangle ABE}}{S_{\triangle BCD}} = \frac{\frac{1}{2} \times 2 \times 4 \times \sin B}{\frac{1}{2} \times 4 \times 2 \times \sin B} = \frac{4}{4}$$

$$S = \frac{1}{2} ab \sin B$$

سوال ۱

الف)

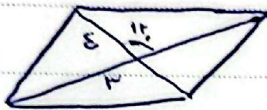


$$S = ab \sin \alpha$$

$$\hookrightarrow 3 \times 4 \times \sin 120^\circ \Rightarrow 4 \times \frac{\sqrt{3}}{2} = 4\sqrt{3}$$

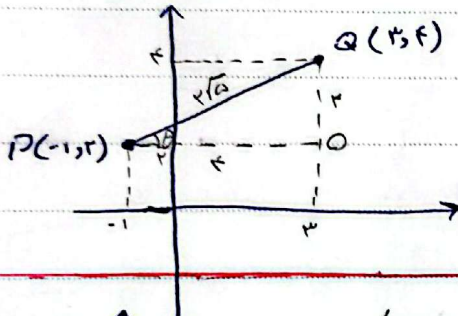
سوال ۲

ب)



$$S = \frac{1}{2} ab \sin \alpha$$

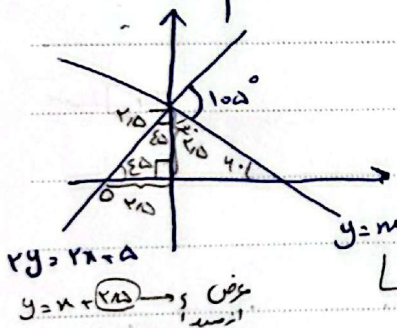
$$\hookrightarrow \frac{1}{2} \times 8 \times 1 \times \frac{\sqrt{2}}{2} = \sqrt{2}$$



$$\cos \theta = \frac{OQ}{PQ} = \frac{2}{\sqrt{14}} = \frac{\sqrt{14}}{7}$$

$$PQ^2 = 14 \Rightarrow PQ = \sqrt{14}$$

سوال ۳



$$\tan \theta = 1 \Rightarrow \theta = 45^\circ$$

$$mb = 2 \times \sqrt{2}$$

سوال ۴

$$f(x) = \cos(x + \frac{\pi}{4}) + \sin(\frac{\pi}{4} + x) - \tan(\frac{3\pi}{4} + x)$$

$$= \cos(x) \cos(\frac{\pi}{4}) - \sin(x) \sin(\frac{\pi}{4}) + \cos(\frac{\pi}{4}) \cos(x) + \sin(\frac{\pi}{4}) \sin(x) - (-\tan(x)) \Rightarrow f(x) = \tan(x)$$

$$f(\frac{4\pi}{9}) = \tan(\frac{4\pi}{9}) \Rightarrow \frac{\sqrt{3}}{3} - \sqrt{3}$$

سوال ۵

$$\frac{\sin(\frac{13\pi}{4} + x) + \cos(\frac{13\pi}{4} - x)}{\cos(2\pi + x) + \sin(4\pi - x)} = \frac{\cos(x) + \sin(x)}{-\cos(x) - (-\sin(x))} = \frac{\cos x + \sin x}{-\cos x + \sin x}$$

سوال ۱۰

پیکو