Year: Month: Day:

نازنین زهرا شفیعی  دهم دختر A  تکلیف سری ۲۰

## سوال ۱

الف) $(\sin 135^\circ + \sin 300^\circ)(\cos 315^\circ - \cos 150^\circ)$

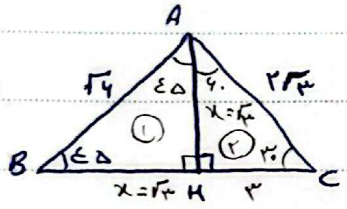
$\left(\frac{\sqrt{2}}{2} - \frac{\sqrt{3}}{2}\right) \times \left(\frac{\sqrt{2}}{2} - \left(-\frac{\sqrt{3}}{2}\right)\right) = \frac{1}{2} - \frac{3}{4} = -\frac{1}{4}$

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

ب) $\frac{1 + 3\tan^2 210^\circ}{4\cos^2 330^\circ + 2\cos^2 225^\circ} = \frac{1 + 3(\frac{1}{\sqrt{3}})^2}{(4 \times \frac{3}{4}) + (2 \times \frac{1}{2})} = \frac{2}{4} = \frac{1}{2}$

## سوال ۲

الف)

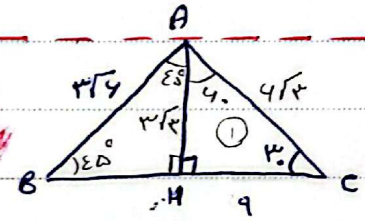



① $x^2 + x^2 = 3^2 \Rightarrow x = \pm\sqrt{3}$

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

$\sin 60^\circ = \frac{\sqrt{3}}{2} \times AC \Rightarrow \frac{\sqrt{3}}{2} \times 4\sqrt{3} = 3 = HC$

ب)

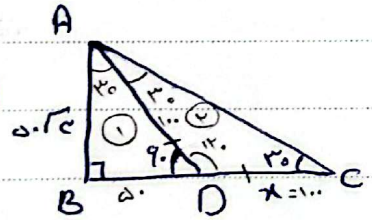



① $\sin 60^\circ = \frac{\sqrt{3}}{2} \rightarrow \frac{\sqrt{3}}{2} \times AC = 9 \Rightarrow AC = 6\sqrt{3}$

$\sin\hat{B} = \frac{3\sqrt{3}}{3\sqrt{6}} = \frac{\sqrt{18}}{6} = \frac{3\sqrt{2}}{6\sqrt{2}} = \frac{\sqrt{2}}{2} \Rightarrow \hat{B} = 45^\circ$

## سوال ۳:

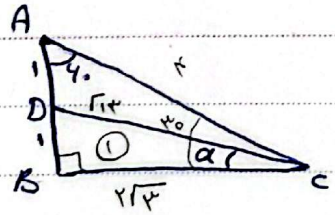
الف)




① $\sin 90^\circ = \frac{\sqrt{2}}{2} \times AD = 50\sqrt{2} \Rightarrow AD = 100$

② $\hat{A} = \hat{C} \Rightarrow AD = DC = x = 100$

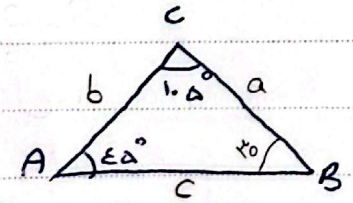
ب)




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

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

## سوال ۴




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

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

$a = \sqrt{2}b$

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

$\left\{\frac{\sqrt{6}+\sqrt{2}}{4}\right.$

$\sin 105^\circ$

$\frac{c}{b} = \frac{b\sin C}{b} = \sin C$

$C = b\sin C$  $\sin(60^\circ + 45^\circ)$

$\hookrightarrow \sin 60^\circ \cos 45^\circ + \sin 45^\circ \cos 60^\circ$

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

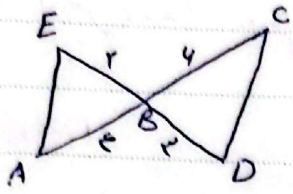
پیگیو

page: ( )

Subject:

Year: Month: Day:

**سوال ۵ :**

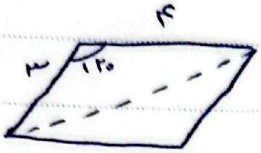



$$\frac{S_{ABE}}{S_{BCD}} = \frac{\frac{1}{2}\times 4\times 2\times \sin B}{\frac{1}{2}\times \frac{4}{3}\times 3\times \sin B} = \frac{4}{9}$$

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

**سوال ۶ :**

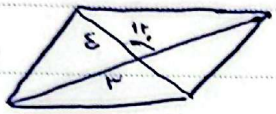
الف)




$$S = a\,b\sin\alpha$$

$$\hookrightarrow 3\times 4\times \sin 120 \Rightarrow 12\times\frac{\sqrt{3}}{2} = 6\sqrt{3}$$

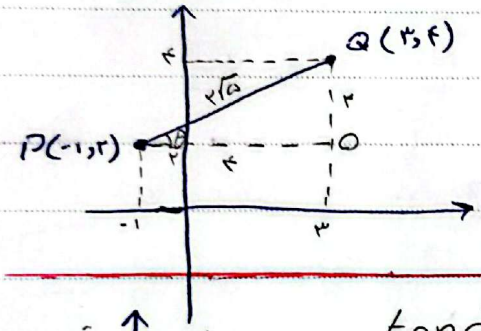
ب)




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

$$\hookrightarrow \frac{1}{2}\times 4\times 3\times\frac{\sqrt{3}}{2} = 3\sqrt{3}$$

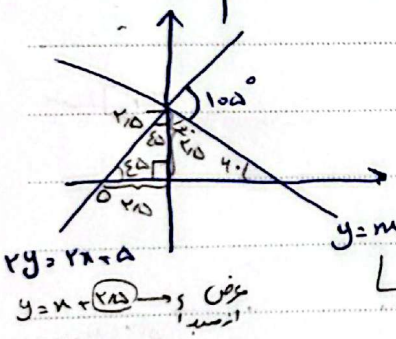
**سوال ۷ :**




$$\cos\theta = \frac{OQ}{PQ} = \frac{4}{2\sqrt{5}} = \frac{2\sqrt{5}}{5}$$

$$PQ^2 = 16 + 4 \Rightarrow PQ = \sqrt{20}$$

**سوال ۸ :**




$$\tan\hat{O} = 1 \rightarrow O = 45°$$

$$mb = 20\sqrt{3}$$

$$y = mx + b \quad (b = 20\sqrt{5})$$

$$\hookrightarrow \tan 40° = \sqrt{3}$$

$$2y = 2x + a$$

$$y = x + 20\sqrt{5} \rightarrow \text{عرض از مبدا}$$

**سوال ۹ :**

$$f(x) = \cos(\pi + x) + \sin\left(\frac{\pi}{2} + x\right) - \tan\left(\frac{3\pi}{2} + x\right)$$

$$-\cos(x) + \cos(x) - (-\tan(x)) \Rightarrow f(x) = \tan(x)$$

$$f\left(\frac{5\pi}{4}\right) = \tan\left(\frac{5\pi}{4}\right) \Rightarrow \frac{\sqrt{3}}{3}$$

**سوال ۱۰ :**

$$\frac{\sin\left(\frac{17\pi}{2} + x\right) + \cos\left(\frac{15\pi}{2} - x\right)}{\cos(2\pi + x) + \sin(4\pi - x)} = \frac{\cos(x) + \sin(x)}{-\cos(x) - (-\sin(x))} = \frac{\cos x + \sin x}{-\cos x + \sin x}$$

پیگیو