

۱. $(\frac{\sqrt{2}}{2} + (-\frac{\sqrt{2}}{2})) (\frac{\sqrt{2}}{2} - (-\frac{\sqrt{2}}{2})) = (\frac{\sqrt{2}}{2})^2 - (-\frac{\sqrt{2}}{2})^2 = \frac{2}{4} - \frac{2}{4} = -\frac{1}{2}$

۲. $\frac{1 + 2(\frac{\sqrt{3}}{2})^2}{4(\frac{\sqrt{3}}{2})^2 + 2(-\frac{\sqrt{3}}{2})^2} = \frac{1 + 2 \times \frac{3}{4}}{4 \times \frac{3}{4} + 2 \times \frac{3}{4}} = \frac{1 + \frac{3}{2}}{3 + \frac{3}{2}} = \frac{\frac{5}{2}}{\frac{9}{2}} = \frac{5}{9}$

۳. $\sin 45 = \frac{\sqrt{2}}{2} = \frac{AH}{\sqrt{2}} \Rightarrow AH = \frac{\sqrt{2} \times \sqrt{2}}{2} = 1$
 $(\sqrt{2})^2 + HC^2 = (2\sqrt{2})^2 \Rightarrow 2 + HC^2 = 8 \Rightarrow HC^2 = 6 \Rightarrow HC = \sqrt{6}$

۴. $\tan 30 = \frac{AH}{HC} = \frac{\sqrt{2}}{\sqrt{6}} \Rightarrow AH = \frac{\sqrt{2} \times \sqrt{6}}{\sqrt{6}} = \sqrt{2}$
 $\sin 60 = \frac{\sqrt{2}}{\sqrt{4}} = \frac{\sqrt{2}}{2} = \frac{1}{2} \Rightarrow 60 = 120 \Rightarrow 60$

۵. $\sin 30 = \frac{5\sqrt{2}}{AC} = \frac{1}{2} \Rightarrow AC = 10\sqrt{2}$ $\tan 45 = \frac{5\sqrt{2}}{BD} = \sqrt{2} \Rightarrow \frac{5\sqrt{2}}{\sqrt{2}} = 5$
 $(5\sqrt{2})^2 + BC^2 + (10\sqrt{2})^2 = 100 \dots = 100 \dots = 100 \dots + BC^2 \Rightarrow BC = 10 \Rightarrow 10 = 10$

۶. $\tan 45 = \sqrt{2} = \frac{BC}{\sqrt{2}} \Rightarrow BC = 2\sqrt{2}$ $\sin \alpha = \frac{1}{\sqrt{10}} = \frac{\sqrt{10}}{10}$
 $1 + (2\sqrt{2})^2 = 17 \Rightarrow DC^2 \Rightarrow DC = \sqrt{17}$

۷. $\frac{BC}{\sqrt{2}} = \frac{AC}{\frac{1}{2}} = \frac{AB}{\frac{\sqrt{2} \times \sqrt{2}}{2}} \Rightarrow \frac{AB}{AC} = \frac{\frac{\sqrt{2} \times \sqrt{2}}{2}}{\frac{1}{2}} = \frac{\sqrt{2} \times \sqrt{2}}{1} = 2$

۸. $\sin 105 = \sin(45 + 60) = \sin 45 \cos 60 + \cos 45 \sin 60 = \frac{\sqrt{2}}{2} \times \frac{1}{2} + \frac{1}{2} \times \frac{\sqrt{2}}{2} = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}}{4} = \frac{\sqrt{2} + \sqrt{2}}{4}$

۹. $\frac{S_{ABE}}{S_{BCD}} = \frac{\frac{1}{2} \times 2 \times 2 \times \sin \alpha}{\frac{1}{2} \times 2 \times 2 \times \sin \alpha} = \frac{1}{4}$

$$\text{ان) } S = \frac{1}{\sqrt{2}} \times \sqrt{2} \times \sin \frac{\pi}{4} = \frac{\sqrt{2}}{\sqrt{2}} = 1$$

-4

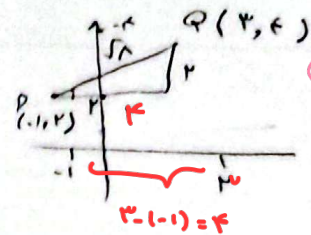
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$$\text{ب) } S = \frac{1}{\sqrt{2}} \times \sqrt{2} \times \sin \frac{\pi}{4} = \frac{\sqrt{2}}{\sqrt{2}} = 1$$

$$\cos \theta = \frac{r}{\sqrt{2}} \rightarrow \frac{r}{\sqrt{2}} = \frac{1}{\sqrt{2}} \rightarrow r = 1$$

$$r^2 = x^2 + y^2 = 1$$

$$x^2 + y^2 = 1 \rightarrow x = \sqrt{1 - y^2}$$



1, 1, 0

$$y = x + 1$$

$$y = x + \frac{a}{r}$$

$$m = 1$$

$$a = \frac{a}{r}$$

$$x = 0 \rightarrow y = \frac{a}{r} \rightarrow y = mx + b \rightarrow \frac{a}{r} = \sqrt{2} \cdot 0 + b \rightarrow b = \frac{a}{r}$$

$$y = mx + b$$

$$m = \tan \beta = \tan 45^\circ = 1$$

$$\beta = 11. - (1 + \sqrt{2}) = 45^\circ$$

$$m \times b = \frac{a}{r} \times \sqrt{2} = \frac{a \sqrt{2}}{r}$$

1, 1, 0

$$f(x) = -\cos(x) + \cos(x) + \cot(x) = \cot(x) \rightarrow \cot\left(\frac{\pi}{4}\right) = 1$$

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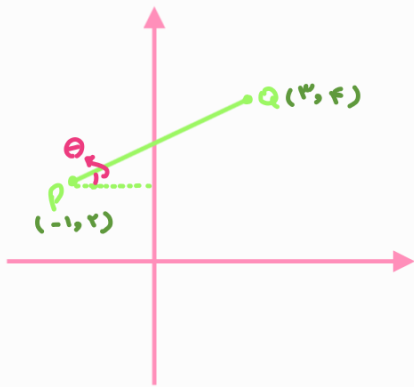
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$$\frac{\cos(x) - \sin(x)}{-\cos(x) - (-\sin(x))} = \frac{\cos x - \sin x}{-\cos x + \sin x} = -1$$

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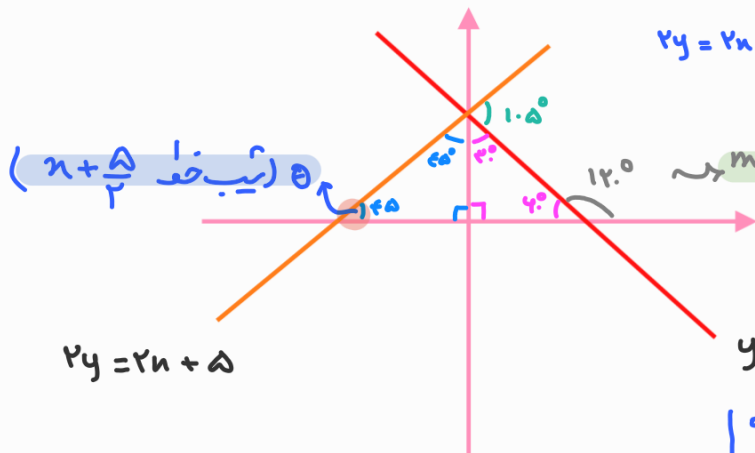
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$$\left(\frac{1}{\sqrt{2}} + x\right) - \left(1 + \frac{1}{\sqrt{2}} \cdot x\right) \rightarrow \left(\sin \frac{\pi}{4} + x\right) = \cos x$$



$$m_{PQ} = \frac{4-2}{3-(-1)} = \frac{1}{2} = \tan \theta \rightarrow 1 + \tan^2 \theta = \frac{1}{\cos^2 \theta}$$

$$1 + \frac{1}{4} = \frac{1}{\cos^2 \theta} \rightarrow \cos^2 \theta = \frac{4}{5} \xrightarrow[\cos \theta > 0]{\theta = 45^\circ} \cos \theta = \frac{2}{\sqrt{5}} = \frac{2\sqrt{5}}{5}$$



$$2y = 2x + 5 \rightarrow m = 1 \rightarrow \tan \theta = 1 \rightarrow \theta = 45^\circ$$

(صيق سطر صده است)

$$(x + \frac{a}{r}, \theta)$$

$$y = mx + b$$

$$2y = 2x + 5$$

$$y = mx + b \rightarrow m = \tan 135^\circ = -\sqrt{3}$$

$$\frac{0}{\frac{1}{\sqrt{3}}} \rightarrow \frac{a}{r} = -\sqrt{3}(\cdot) + b \rightarrow b = \frac{a}{r}$$

$$mb = -\sqrt{3} \times \frac{a}{r} = -\frac{a\sqrt{3}}{r}$$