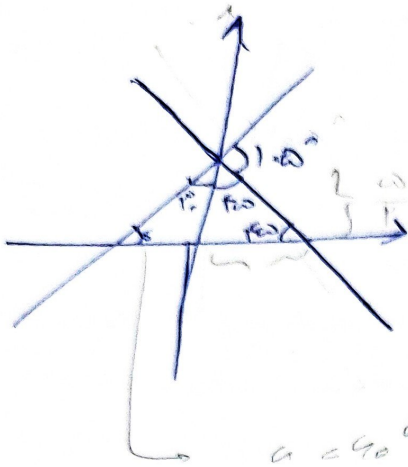




$$y = x$$

$$y = x$$

$$y = x$$

$$y = x$$

$$y = x$$

$$m = \sqrt{2}$$

$$a = 45^\circ \quad \tan 45^\circ = \sqrt{2}$$

$$r \cos = b$$

$$mb = r \sin \sqrt{2}$$

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

$$\cos(\pi + 135^\circ) = \cos(135^\circ) = -\frac{\sqrt{2}}{2}$$

$$\sin\left(\frac{\pi}{r} - 135^\circ\right) = -\cos(135^\circ) = \frac{\sqrt{2}}{2}$$

$$\tan\left(\frac{\pi}{r} + 135^\circ\right) = \cot(135^\circ) = -\sqrt{2}$$

$$\frac{\sin\left(\frac{135^\circ}{r} + x\right) + \cos\left(\frac{135^\circ}{r} - x\right)}{\cos(\pi + x) - \sin\left(\frac{\pi}{r} - x\right)} = \frac{\cos(x) + \sin(x)}{-\cos(x) + \sin(x)} = -1$$

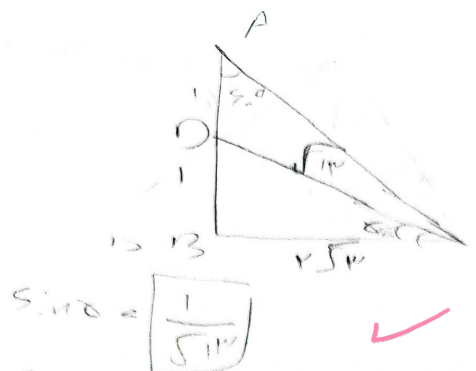
1, 1, 1, 1

1

10

1

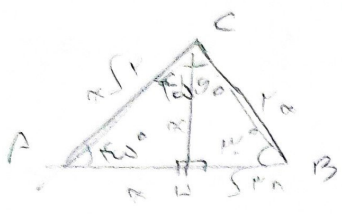
۱)



$$\tan \theta = \frac{BC}{AB} = \frac{\sqrt{3}}{1} \Rightarrow BC = \sqrt{3}$$

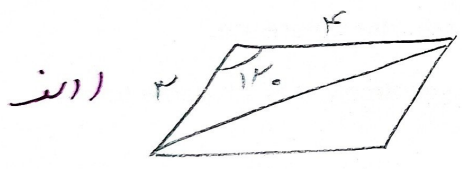
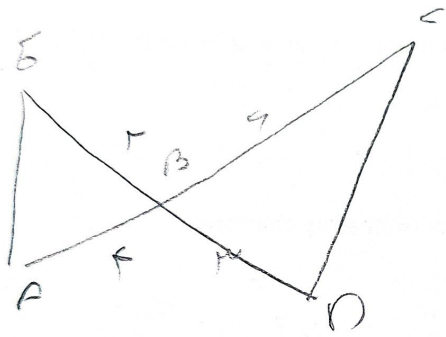
$$\Rightarrow BO = \frac{1}{\sqrt{3}}$$

$$\sin \theta = \frac{1}{2}$$



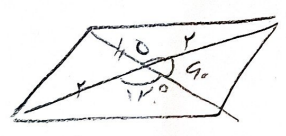
$$\frac{BH}{a} = \frac{\sqrt{3}}{1} \Rightarrow BH = \sqrt{3}a$$

$$AB = (\sqrt{3}+1)a \quad AC = a\sqrt{3} \quad \frac{AB}{AC} = \frac{\sqrt{3}+1}{\sqrt{3}}$$



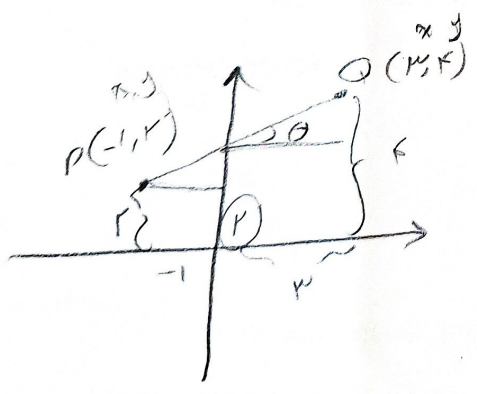
$$a \times a \times \frac{1}{a} \times \sin \theta = a \sin \theta$$

۲)



$$S = \frac{1}{2} \times \frac{1}{a} \times \frac{1}{a} \times \sin \theta = \frac{1}{2a^2} \sin \theta$$

۴، ۳ طول یک قطر است!



$$y = ax + b$$

$$x = \frac{y-b}{a}$$

$$r = \sqrt{a^2 + b^2}$$

$$\theta = \tan^{-1} \left(\frac{b}{a} \right)$$

$$r \cos \theta = x$$

$$r \sin \theta = y$$

$$r = \sqrt{x^2 + y^2}$$

$$\theta = \tan^{-1} \left(\frac{y}{x} \right)$$

$$\frac{\sin \theta}{\cos \theta} = \frac{y}{x} \quad \sin \theta = \frac{y}{r} \quad \cos \theta = \frac{x}{r}$$

$$(\cos \theta)^2 + (\sin \theta)^2 = 1$$

$$\cos \theta = \frac{x}{r}$$

$$\cos^2 \theta + \sin^2 \theta = 1 \Rightarrow \cos^2 \theta = \frac{x^2}{r^2}$$

۱۷، ۲۵ ی تریگنومتری

۱) $\sin 135^\circ = \sin(90^\circ + 45^\circ) = +\cos(45^\circ) = \frac{\sqrt{2}}{2}$

$\sin 225^\circ = \sin(180^\circ + 45^\circ) = -\sin(45^\circ) = -\frac{\sqrt{2}}{2}$

$\cos 135^\circ = \cos(90^\circ + 45^\circ) = -\sin(45^\circ) = -\frac{\sqrt{2}}{2}$

$\cos 225^\circ = \cos(180^\circ + 45^\circ) = -\cos(45^\circ) = -\frac{\sqrt{2}}{2}$

$\left(\frac{\sqrt{2}}{2} + (-\frac{\sqrt{2}}{2})\right) \left(-\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}\right) = \frac{\sqrt{2}-\sqrt{2}}{2} \cdot \frac{\sqrt{2}-\sqrt{2}}{2} = \frac{0}{2} = 0$

$(\sqrt{\frac{2}{2}})^2 - (\sqrt{\frac{2}{2}})^2 = \frac{2}{2} - \frac{2}{2} = 0$

۱، ۷، ۵

ب) $\frac{1 + \sqrt{2} \tan 135^\circ}{\tan 135^\circ + \sqrt{2} \cos 135^\circ} = \frac{1 + \sqrt{2} \left(\frac{1}{\sqrt{2}}\right)}{\frac{1}{\sqrt{2}} \left(\frac{\sqrt{2}}{2}\right) + \sqrt{2} \left(-\frac{\sqrt{2}}{2}\right)} = \frac{1 + 1}{\frac{1}{2} - 1} = \frac{2}{-\frac{1}{2}} = -4$

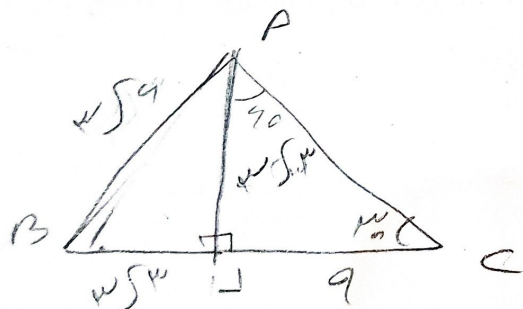
$\tan 135^\circ = \tan(90^\circ + 45^\circ) = -\cot(45^\circ) = -1$

$\cos 135^\circ = \cos(90^\circ + 45^\circ) = -\sin(45^\circ) = -\frac{\sqrt{2}}{2}$

$\cos 225^\circ = \cos(180^\circ + 45^\circ) = -\cos(45^\circ) = -\frac{\sqrt{2}}{2}$

۱) $AH = BH = \frac{\sqrt{2}}{2} \cdot \sqrt{2} = 1$

$(HC)^2 = (\sqrt{2})^2 - (1)^2 = 2 - 1 = 1 \Rightarrow HC = 1$



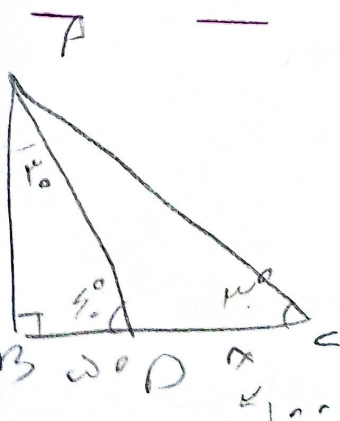
$\frac{AH}{9} = \tan 45^\circ = 1 \Rightarrow AH = 9$

$\frac{BH}{9} = \tan 45^\circ = 1 \Rightarrow BH = 9$

$(BH)^2 = (\sqrt{2})^2 - (1)^2 = 2 - 1 = 1 \Rightarrow BH = 1$

$BH = \sqrt{2}$

$B = 45^\circ$



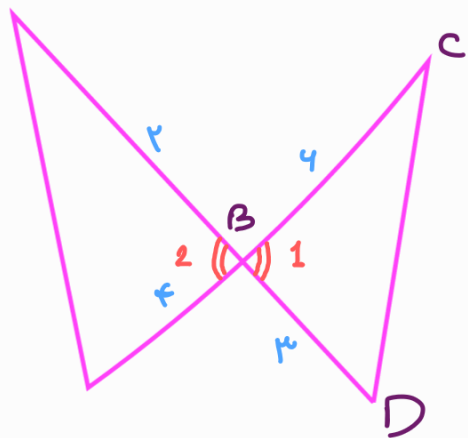
$\tan 45^\circ = \frac{BD}{AD} = 1 \Rightarrow BD = AD = 1$

$\tan 45^\circ = \frac{BD}{DC} = 1 \Rightarrow BD = DC = 1$

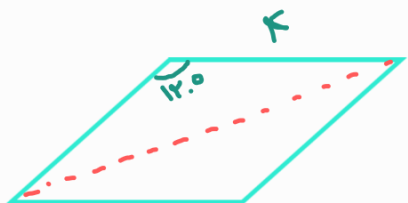
$$\text{جواب)} (\sin 14^\circ + \sin 12^\circ) (\cos 14^\circ - \cos 12^\circ)$$

$$\left(\sqrt{\frac{1}{2}} - \sqrt{\frac{1}{2}}\right) \left(\sqrt{\frac{1}{2}} - \left(-\sqrt{\frac{1}{2}}\right)\right) = \left(\sqrt{\frac{1}{2}}\right)^2 - \left(\sqrt{\frac{1}{2}}\right)^2 = \frac{1}{2} - \frac{1}{2} = \boxed{-\frac{1}{2}}$$

$$\hookrightarrow \frac{1 + \tan^2 10^\circ}{\cos^2 10^\circ + \tan^2 10^\circ} = \frac{1 + \tan^2 10^\circ}{\cos^2 10^\circ + \tan^2 10^\circ} = \frac{1 + 1}{1 + 1} = \boxed{\frac{1}{2}}$$

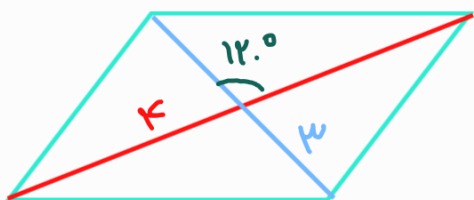


$$\frac{S_{ABC}}{S_{DCB}} = \frac{\frac{1}{2} \times 4 \times 2 \times \sin \beta_1}{\frac{1}{2} \times 4 \times 2 \times \sin \beta_2} = \frac{1}{1} = \frac{1}{1}$$

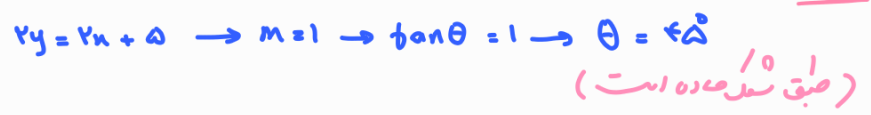


$$S = \frac{1}{2} \times 4 \times 4 \times \sin 14^\circ = 4\sqrt{3}$$

از دایره هم می‌توانستیم استفاده کنیم!



$$S = \frac{1}{2} \times 4 \times 4 \times \sin 14^\circ = 4\sqrt{3}$$



$$y = mx + b \rightarrow m = \tan 14^\circ = -\sqrt{x}$$

$$m_b = -\sqrt{r} \times \frac{\omega}{r} = -\frac{\omega\sqrt{r}}{r}$$

$$m_b = -\sqrt{r} \times \frac{\omega}{r} = -\frac{\omega\sqrt{r}}{r}$$