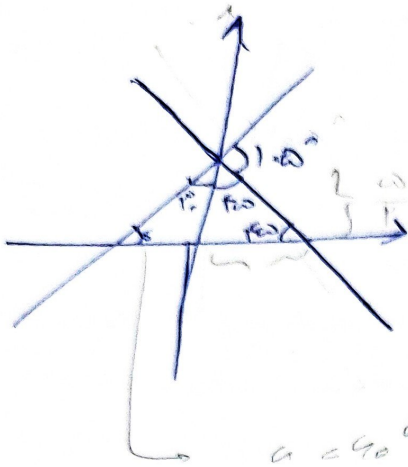




$$y = \frac{1}{1}x$$

$$y = x$$

$$y = \frac{1}{1}x$$

$$y = \frac{1}{1}x$$

$$y = \frac{1}{1}x$$

$$m = \frac{1}{1}$$

$$r_1 \omega = b$$

$$mb = r_1 \omega \sqrt{r}$$

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

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

$$\cos(\pi + 120^\circ) = \cos(120^\circ) = -\frac{\sqrt{r}}{r}$$

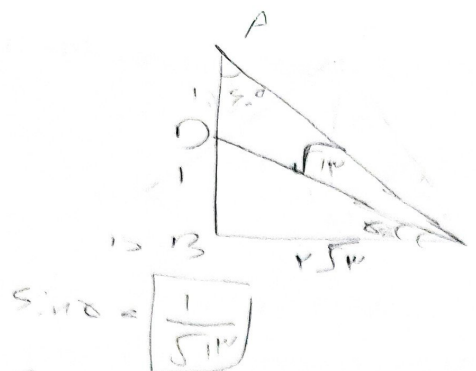
$$\sin\left(\frac{\pi}{r} - 60^\circ\right) = -\cos(120^\circ) = \frac{\sqrt{r}}{r}$$

$$\tan\left(\frac{\pi}{r} + 120^\circ\right) = \cot(120^\circ) = -\sqrt{r}$$

$$\frac{\sin\left(\frac{120^\circ}{r} + x\right) + \cos\left(\frac{120^\circ}{r} - x\right)}{\cos(\pi + x) - \sin\left(\frac{120^\circ}{r} - x\right)} = \frac{\cos(x) + \sin(x)}{-\cos(x) + \sin(x)} = \boxed{-1}$$

-10

ج

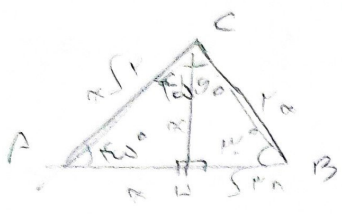


$$\tan \theta = \frac{BC}{AB} = \frac{\sqrt{14}}{1} \Rightarrow BC = \sqrt{14}$$

$$OC = \sqrt{14}$$

$$\sin \theta = \frac{1}{\sqrt{14}}$$

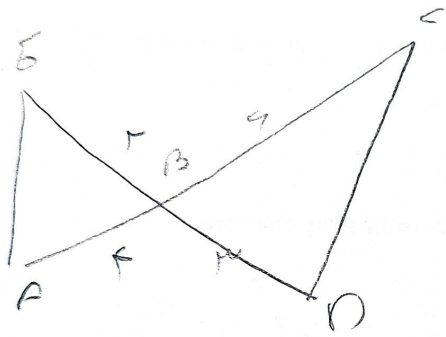
1



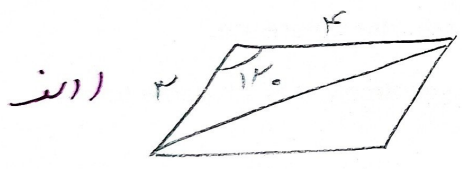
$$\frac{BH}{x} = \frac{CH}{1} \Rightarrow BC = \sqrt{14} x$$

$$AB = (\sqrt{14} + 1)x \quad AC = x\sqrt{14} \quad \frac{AB}{AC} = \frac{\sqrt{14} + 1}{\sqrt{14}}$$

ك

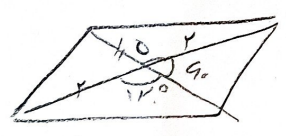


د



$$x \times \frac{1}{x} \times \sin \theta = \sqrt{14}$$

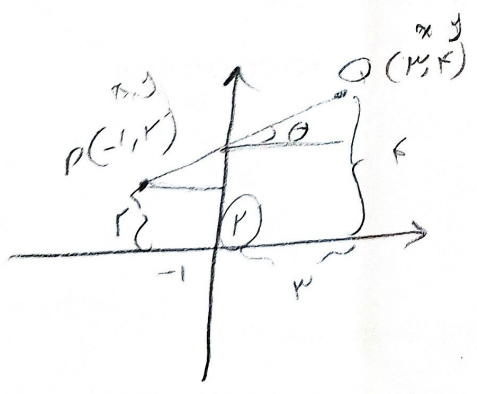
ب



$$S = \frac{1}{2} \times \frac{1}{x} \times \sin \theta = \sqrt{14}$$

ق

و



$$y = ax + b$$

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

$$r = -a + b$$

$$r - \frac{y-b}{a} = r + a - \frac{y}{a}$$

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

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

$$a = \frac{y}{r} \Rightarrow \tan \theta = \frac{y}{r}$$

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

$$(\cos \theta)^r = (r, \frac{y}{r} \cos \theta)^r = 1$$

$$\cos \theta = \frac{1}{\sqrt{14}}$$

$$\cos^r \theta = \frac{y}{r} \cos \theta^r = 1 \Rightarrow \cos \theta^r = \frac{1}{\sqrt{14}}$$

و) $\sin 135^\circ = \sin(90^\circ + 45^\circ) = +\cos(45^\circ) = \frac{\sqrt{2}}{2}$ -1

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

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

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

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

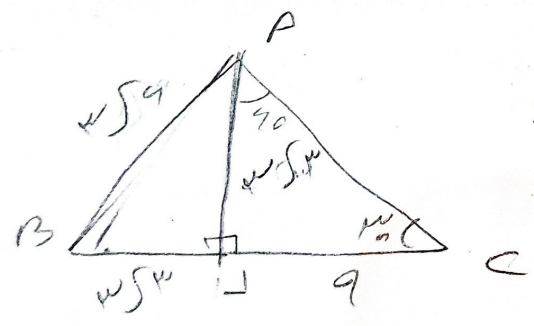
ب) $\frac{1 + \tan^2 \theta}{\sec^2 \theta} = \frac{1 + \tan^2 \left(\frac{1}{\sqrt{3}}\right)}{\sec^2 \left(\frac{1}{\sqrt{3}}\right)} = \frac{1 + \left(\frac{1}{3}\right)}{1 + 1} = \frac{4/3}{2} = \frac{2}{3}$

$\tan 75^\circ = \tan(45^\circ + 30^\circ) = \frac{1 + \tan 45^\circ \tan 30^\circ}{1 - \tan 45^\circ \tan 30^\circ} = \frac{1 + \frac{1}{\sqrt{3}}}{1 - \frac{1}{\sqrt{3}}}$

$\cos 15^\circ = \cos(45^\circ - 30^\circ) = \cos 45^\circ \cos 30^\circ + \sin 45^\circ \sin 30^\circ = \frac{\sqrt{2}}{2} \cdot \frac{\sqrt{3}}{2} + \frac{\sqrt{2}}{2} \cdot \frac{1}{2} = \frac{\sqrt{6} + \sqrt{2}}{4}$

$\cos 105^\circ = \cos(45^\circ + 60^\circ) = \cos 45^\circ \cos 60^\circ - \sin 45^\circ \sin 60^\circ = \frac{\sqrt{2}}{2} \cdot \frac{1}{2} - \frac{\sqrt{2}}{2} \cdot \frac{\sqrt{3}}{2} = \frac{\sqrt{2} - \sqrt{6}}{4}$

د) $AH = BH = \frac{\sqrt{2}}{2} \cdot \sqrt{2} = 1$
 $(HC)^2 = (\sqrt{2})^2 - 1^2 = 2 - 1 = 1 \Rightarrow HC = 1$

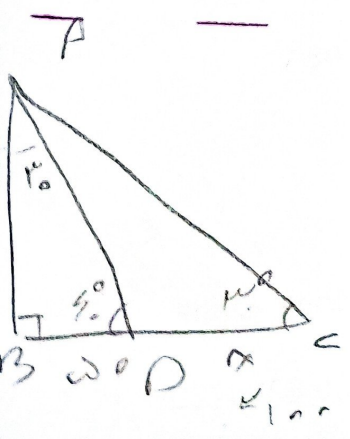


$\frac{AH}{9} = \tan 30^\circ = \frac{1}{\sqrt{3}} \Rightarrow \frac{AH}{9} = \frac{1}{\sqrt{3}} \Rightarrow AH = \frac{9}{\sqrt{3}} = 3\sqrt{3}$

$(BH)^2 = (\sqrt{2})^2 - (3\sqrt{3})^2 = 2 - 27 = -25$
 $2 - 27 = -25$

$BH = \sqrt{2}$

$B = 45^\circ$



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

$\tan 30^\circ = \frac{BD}{DC} = \frac{1}{\sqrt{3}} \Rightarrow BD = \frac{DC}{\sqrt{3}} \Rightarrow DC = \sqrt{3} BD$