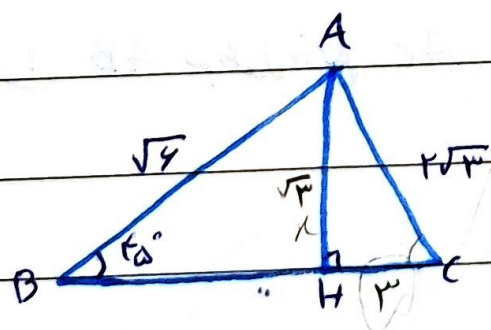


نفسرنا اسد علی ۲۰

الف) $(\sin 135^\circ + \sin 225^\circ)(\cos 135^\circ - \cos 225^\circ) = \frac{\sqrt{2}}{2} + (-\frac{\sqrt{2}}{2}) \times \frac{\sqrt{2}}{2} - (-\frac{\sqrt{2}}{2})$ ①

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

ب) $\frac{1 + 3 \tan^2 45^\circ}{2 \cos^2 45^\circ + 2 \cos^2 135^\circ} = \frac{1 + 3(\frac{\sqrt{2}}{2})^2}{2 \times (\frac{\sqrt{2}}{2})^2 + 2(-\frac{\sqrt{2}}{2})^2} = \frac{1 + 3 \times \frac{2}{4}}{2 \times \frac{2}{4} + 2 \times \frac{2}{4}} = \frac{1 + 1}{2 + 2} = \frac{2}{4} = \frac{1}{2}$



طرح ضلع و زاویه پیدا کردیم:

$\sin 45^\circ = \frac{x}{\sqrt{4}} = \frac{\sqrt{2}}{2} \rightarrow \frac{\sqrt{2} \times \sqrt{2}}{2} = \frac{\sqrt{4}}{2} = \frac{2}{2} = 1$

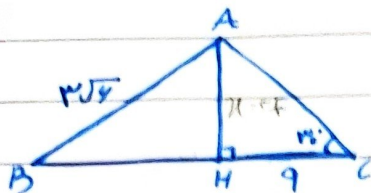
$(2\sqrt{3})^2 = x^2 + (\sqrt{3})^2$

$12 = x^2 + 3$

$9 = x^2$

$x = 3$

ب) اندازهای B

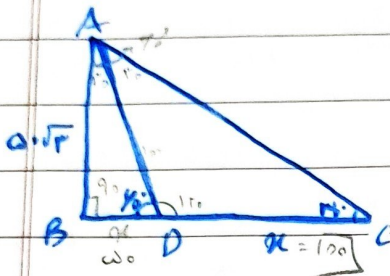


$$\tan 45^\circ = \frac{\sqrt{2}}{1} = \frac{2}{1} = \frac{9\sqrt{2}}{9} = \sqrt{2}$$

$$\sin B = \frac{1 \times \sqrt{2}}{1 \times \sqrt{2} \times \sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$(B = 45^\circ)$$

۳)



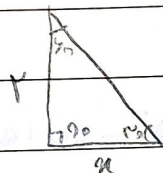
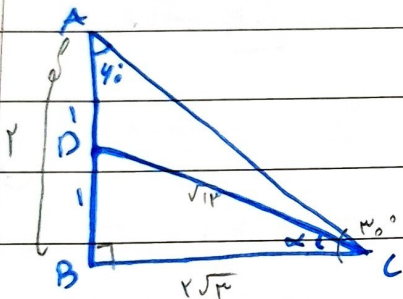
$$\tan 40^\circ = \frac{\sqrt{2}}{1} = \frac{40\sqrt{2}}{40} = \frac{40\sqrt{2}}{40}$$

مقدار 40

$$\tan 40^\circ = \frac{\sqrt{3}}{1} = \frac{40 + 40}{40\sqrt{3}} = \frac{40 + 40}{40\sqrt{3}} = \frac{40 + 40}{40\sqrt{3}}$$

$$40 + 40 = 160$$

$$40 = 160$$



مقدار 40

$$\tan 45^\circ = \frac{\sqrt{2}}{1} = \frac{2}{1} = \sqrt{2} = 2$$

$$40 = 2\sqrt{2}$$

$$(2\sqrt{2})^2 + 1 = 4^2$$

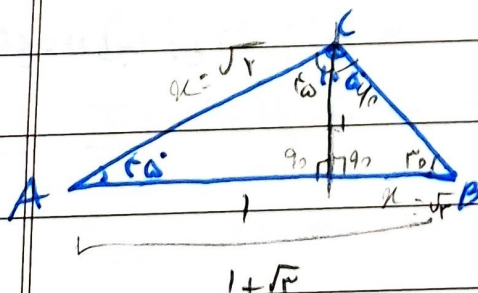
$$4 \times 2 + 1 = 4^2$$

$$1^2 = 4^2$$

$$\sqrt{1^2} = 4$$

$$\sin 45^\circ = \frac{1}{\sqrt{2}}$$

۴) نسبت طول AB به طول AC



$$\frac{100}{40}$$

$$\tan A = \tan 45^\circ = \frac{1}{1}$$

$$1^2 + 1^2 = 4^2$$

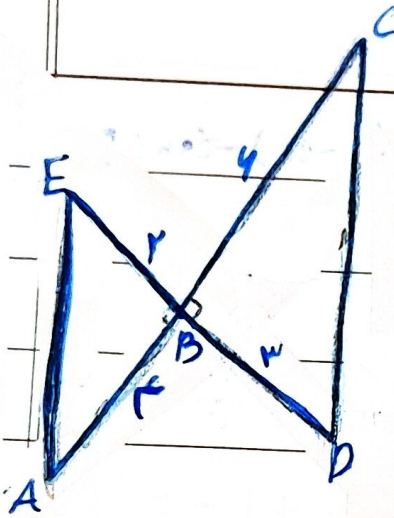
$$1^2 = 4^2$$

$$4 = \sqrt{1^2}$$

$$\tan B = \tan 45^\circ = \frac{\sqrt{2}}{1} = \frac{1}{1} = 1 = \sqrt{2} \times 1$$

$$\sqrt{1^2} = 1$$

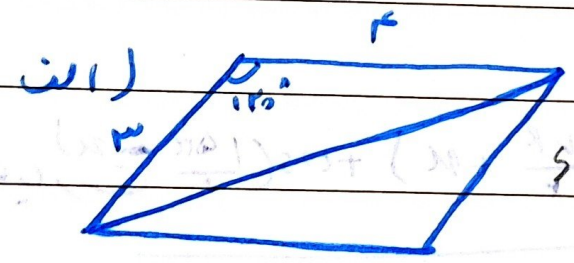
$$\frac{AB}{AC} = \frac{1 + \sqrt{2}}{\sqrt{2}}$$



مساحت ABE و مساحت BCD
 (د) مساحت ABE و مساحت BCD

$$\left. \begin{aligned} ABE: \frac{1}{2} \times r \times r \times \sin 90^\circ &= \frac{1}{2} \times r \times r \times 1 = r \\ DCB: \frac{1}{2} \times r \times 4 \times \sin 90^\circ &= \frac{1}{2} \times r \times 4 \times 1 = 2r \end{aligned} \right\} \frac{r}{2}$$

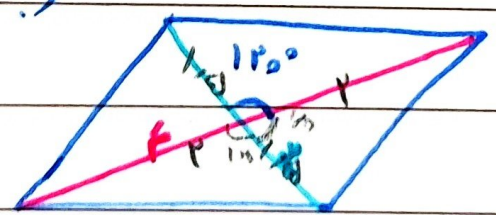
9



(ب) مساحت متوازی الاضلاع زیر

$$S = r \times 3 \times \sin 120^\circ = r \times 3 \times \frac{\sqrt{3}}{2} = \frac{3\sqrt{3}}{2}r$$

9



$$\frac{1}{2} \times r \times r \times \sin 120^\circ = \frac{1}{2} \times r \times r \times \frac{\sqrt{3}}{2} \times 2 = \frac{r^2 \sqrt{3}}{2}$$

$$\frac{1}{2} \times r \times r \times \sin 60^\circ = \frac{1}{2} \times r \times r \times \frac{\sqrt{3}}{2} \times 2 = \frac{r^2 \sqrt{3}}{2}$$

$$\left[\frac{r^2 \sqrt{3}}{2} + \frac{r^2 \sqrt{3}}{2} = \frac{r^2 \sqrt{3} + r^2 \sqrt{3}}{2} = \frac{2 \times r^2 \sqrt{3}}{2} = r^2 \sqrt{3} \right]$$

المطلوب $f(\frac{\pi R}{4})$ ، إذاً $f(x) = \cos(R+x) + \sin(\frac{R}{r} - x) - \tan(\frac{\pi R}{r} + x)$ (9)

$-\cos + \sin + \cot = f(x)$ $\rightarrow f(x) = \cot x$
 $f(\frac{\omega \pi}{4}) = \frac{\sqrt{r}}{r} + \frac{1}{r} - \frac{\sqrt{r}}{1} = -\sqrt{r}$ (5)

$f(\frac{\omega R}{4}) = > 100^\circ$ $\cos = -\frac{\sqrt{r}}{r}$
 $\sin = \frac{1}{r}$ $\cot = -\sqrt{r}$
 $\frac{\sqrt{r} + 1 - r\sqrt{r}}{r} = \frac{-\sqrt{r} + 1}{r}$

$\sin(\frac{1\sqrt{r}}{r} + x) + \cos(\frac{1\omega R}{r} - x)$ (6)
 $\cos(R+x) - \sin(\frac{r}{r} - x)$ (5)

$\frac{+\cos - \sin}{-\cos + \sin} = -1$