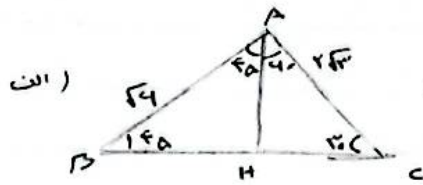
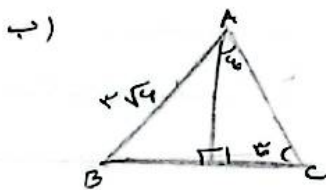


$$\text{الف) } \left(\frac{\sqrt{3}}{4} + (-\frac{\sqrt{3}}{4}) \right) \left(\frac{\sqrt{3}}{4} - (-\frac{\sqrt{3}}{4}) \right) = \left(\frac{\sqrt{3}}{4} \right)^2 - \left(\frac{\sqrt{3}}{4} \right)^2 = \frac{3}{16} - \frac{3}{16} = -\frac{1}{4}$$

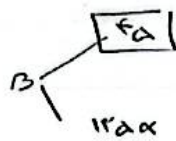
$$\text{ب) } \frac{1 + 3\left(\frac{1}{\sqrt{3}}\right)}{4\left(\frac{\sqrt{3}}{4}\right)^2 + 2\left(-\frac{\sqrt{3}}{4}\right)^2} = \frac{1 + 3 \times \frac{1}{\sqrt{3}}}{2 \times \frac{3}{16} + 2 \times \frac{3}{16}} = \frac{1 + \sqrt{3}}{1 + 1} = \frac{1 + \sqrt{3}}{2}$$



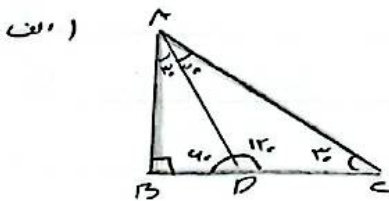
$$\text{الف) } AH = \frac{\sqrt{3}}{4} \times 4 = \sqrt{3} \quad AH = \frac{1}{2} AC \rightarrow C = 30^\circ \quad HC = \frac{\sqrt{3}}{4} \times 2\sqrt{3} = \frac{3}{2}$$



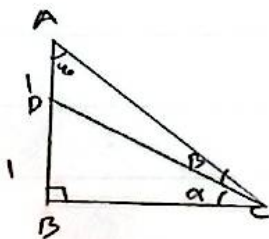
$$\text{ب) } \frac{\sqrt{3}}{4} \times AC = 1 \rightarrow AC = 4\sqrt{3} \quad AH = \frac{1}{2} \times 4\sqrt{3} = 2\sqrt{3} \quad \sin B \times 4\sqrt{3} = 2\sqrt{3} \quad \sin B = \frac{\sqrt{3}}{4}$$



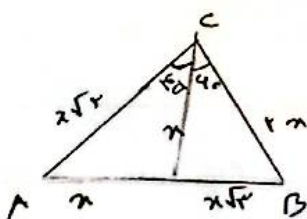
زاویه با هم خاصه باشد با هم
شکل



$$\frac{\sqrt{3}}{4} \times AD = 2\sqrt{3} \rightarrow AD = 4 \quad \hat{A} = 180^\circ - (90^\circ + 30^\circ) = 60^\circ \quad \hat{DAC} = 90^\circ - 30^\circ = 60^\circ \quad \hat{DCA} = 30^\circ \rightarrow \hat{ADC} \text{ متساوی الساقین} \quad AD = 4 = 2x$$



$$\alpha + \beta = \frac{1}{2} \times AC \rightarrow AC = 4 \quad BC = \frac{\sqrt{3}}{4} \times AC = 2\sqrt{3} \quad DC = \sqrt{1^2 + (2\sqrt{3})^2} = \sqrt{13} \quad \sin \alpha \times \sqrt{13} = 1 \rightarrow \sin \alpha = \frac{\sqrt{13}}{13}$$

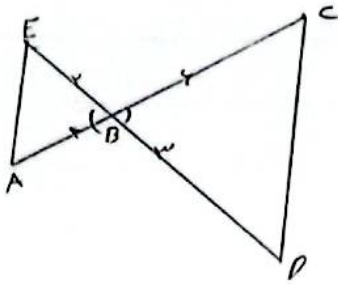


$$\sin \hat{A} = \frac{\sqrt{3}}{4} \rightarrow x = \frac{\sqrt{3}}{4} \times AC \rightarrow AC = 2x\sqrt{3}$$

$$AH = \frac{\sqrt{3}}{4} \times 2x\sqrt{3} = x \quad \hat{HCB} = 180^\circ - \hat{A} = 90^\circ \quad \hat{B} = 30^\circ$$

$$x = \frac{1}{2} \times BC \rightarrow BC = 2x \quad HD = \frac{\sqrt{3}}{4} \times 2x = x\sqrt{3}$$

$$\frac{AB}{AC} = \frac{x + x\sqrt{3}}{2x\sqrt{3}} = \frac{x(1 + \sqrt{3})}{2x\sqrt{3}} = \frac{\sqrt{3} + \sqrt{9}}{2}$$



$$\frac{\Delta_{ABE}}{\Delta_{DCB}} = \frac{\frac{1}{2} \sin \hat{ABE} \times AB \times BE}{\frac{1}{2} \sin \hat{DCB} \times DB \times BC} \xrightarrow{\sin \hat{ABE} = \sin \hat{DCB}} \frac{AB \times BE}{DB \times BC} = \frac{a}{b}$$

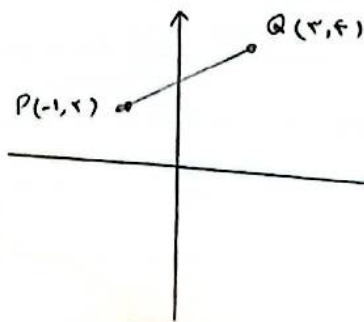
$$\frac{r \times f}{r \times 4} = \frac{f}{4}$$

Q1

$$S = r \times f \times \frac{\sqrt{r}}{r} = 4\sqrt{r}$$

$$\sin 150^\circ = \frac{\sqrt{r}}{r}$$

$$S = \frac{1}{2} \times r \times f \times \sin 150^\circ = 4\sqrt{r}$$



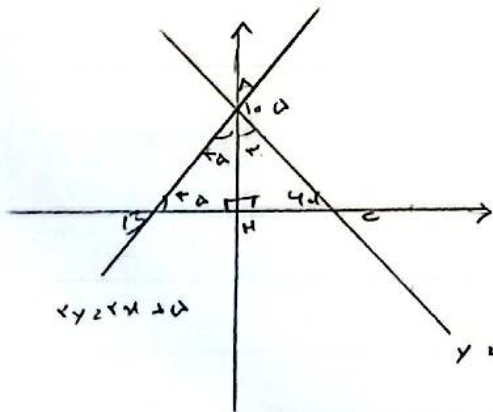
$$y = ax + b \quad a = \tan \theta = \frac{\Delta y}{\Delta x} \quad \tan \alpha = \frac{f-2}{r-(-1)} = \frac{1}{r}$$



$$\textcircled{1} \quad 1 + \tan^2 \theta = \frac{1}{\cos^2 \theta} \rightarrow \cos \theta = \pm \frac{r}{\sqrt{r^2 + 1}}$$

$$\alpha = \theta \quad \tan \theta = \frac{1}{r}$$

$$\alpha = 180^\circ - \theta \rightarrow \tan \theta = -\tan \alpha = -\frac{1}{r}$$



$$ry = rx + a \rightarrow ry = x + r/a \quad \tan \alpha = \frac{1}{r/a} = \frac{a}{r}$$

$$\hat{B} \hat{A} H = 180^\circ - (90^\circ + \alpha) = 90^\circ - \alpha$$

$$y = mx + b \quad \hat{A} \hat{B} H = 90^\circ - \alpha, \quad \hat{A} H = 180^\circ - (90^\circ + \alpha) = 90^\circ - \alpha$$

$$\hat{H} \hat{A} C = 180^\circ - (90^\circ + \alpha) = 90^\circ - \alpha \quad \hat{H} \hat{E} A = 180^\circ - (90^\circ + \alpha) = 90^\circ - \alpha \quad \hat{C} = 180^\circ - 90^\circ = 90^\circ$$

$$\tan 150^\circ = -\sqrt{3} = m \quad b = r/a \quad \text{Slope } m = -\sqrt{3} \times r/a = -\frac{a\sqrt{3}}{r}$$

Date:

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$$f\left(\frac{4\pi}{9}\right) = \cos\left(\pi + \frac{4\pi}{9}\right) + \sin\left(\frac{\pi}{9} - \frac{4\pi}{9}\right) - \tan\left(\frac{4\pi}{9} + \frac{4\pi}{9}\right) \quad -9$$

$$= \cos\left(\frac{4\pi}{9}\right) - \cos\left(\frac{4\pi}{9}\right) - \cot\left(\frac{4\pi}{9}\right) = -\cot 100^\circ = \sqrt{r} \rightarrow \cot 100^\circ = -\sqrt{r}$$

$$\frac{\sin\left(\frac{\sqrt{\pi}}{r} + x\right) + \cos\left(\frac{10\pi}{r} - x\right)}{\cos(\pi + x) - \sin(4\pi - x)} = \frac{\cos(x) - \sin(x)}{-\cos(x) + \sin(x)} = \frac{-(-\cos(x) + \sin(x))}{-\cos(x) + \sin(x)} = \boxed{-1}$$

$$\frac{\sin\left(\frac{\pi}{r} + x\right) + \cos\left(\frac{\pi}{r} - x\right)}{\cos(\pi + x) - \sin(4\pi - x)}$$