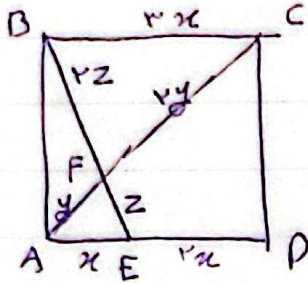


۲۰ آفرین!

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سید علی

$$2AE = ED \Rightarrow AD = 3AE \Rightarrow BC = 3AE$$



$$\triangle AFE \approx \triangle BFC \Rightarrow$$

$$BE = \sqrt{(3x)^2 + x^2} = \sqrt{10}x = x\sqrt{10} \Rightarrow \frac{x}{\sqrt{10}}$$

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

$$\frac{\sqrt{10}}{3} \checkmark$$

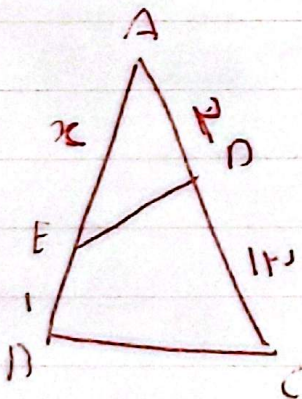
$$\hat{AED} = \hat{ACB}$$

$$\Rightarrow ACB \sim AED$$

$$\frac{AE}{EC} = \frac{AD}{AB} \Rightarrow \frac{x}{2x} = \frac{3x}{x\sqrt{2}} \Rightarrow \frac{1}{2} = \frac{3}{\sqrt{2}} \Rightarrow \sqrt{2} + x = 3 \Rightarrow$$

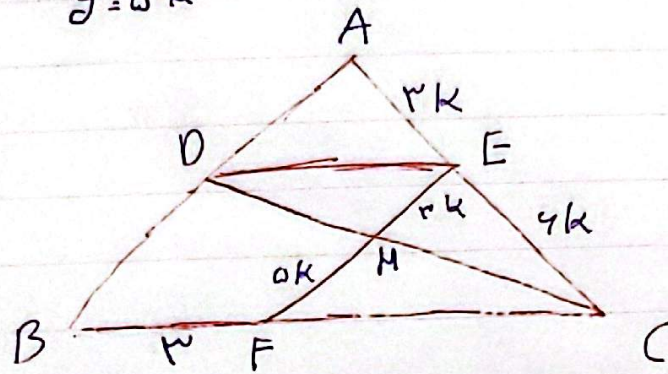
$$x = \omega \checkmark \checkmark$$

$$x = 9 = \text{غیر صحیح}$$



$$x = 3k$$

$$y = 4k$$



$$\frac{3k}{9k} = \frac{DE}{BC}$$

$$\triangle DHE \sim \triangle HFC \Rightarrow \frac{3k}{4k} = \frac{DE}{FC}$$

$$9k \cdot DE = 3k \cdot BC$$

$$3DE = BC$$

$$10DE = 4FC + 10$$

(1)

$$4DE = 3FC$$

$$10DE = 9FC \quad (2)$$

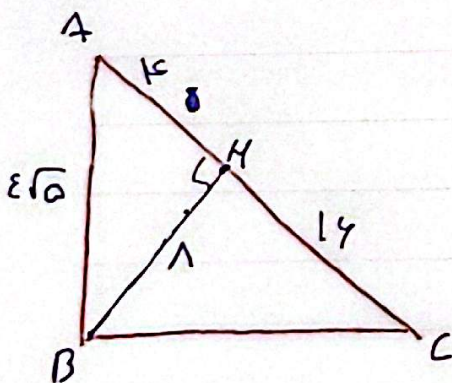
(1), (2)

$$4FC + 10 = 9FC$$

$$5FC = 10$$

$$FC = \frac{10}{5}$$

$$BC = \frac{10}{5} + \frac{10}{5} = \frac{20}{5} = 4 \quad (3) \quad \checkmark$$



$$3 - 2 = 1$$

$$\widehat{AH} \times \widehat{HC} = \widehat{BH}^2$$

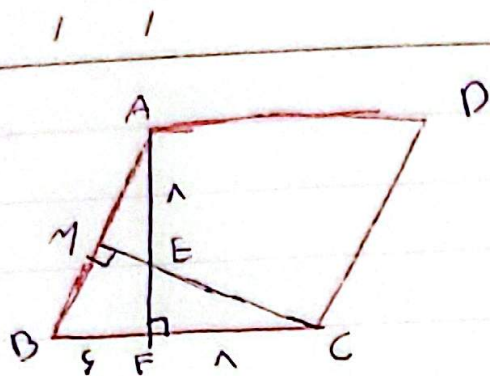
$$3 \times 9 = 4 \Rightarrow \widehat{BH} = 3$$

$$AB^2 = 9 + 16 \Rightarrow AB = \sqrt{25} = 5$$

$$BC^2 = 9 + 16 \Rightarrow BC = \sqrt{25} = 5$$

$$\frac{BC}{AB} = \frac{5}{5} = 1 \quad (4) \quad \checkmark$$

$$\frac{AB}{BC} = \frac{5}{5} = 1 \quad \checkmark$$



$$AD = BC = 12$$

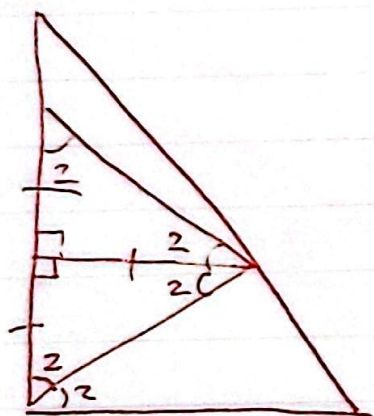
$$FC = 12 - 9 = 3$$

$$\triangle AME \sim \triangle FEC \Rightarrow$$

$$\frac{BF}{EF} = \frac{AF}{CF} \Rightarrow \frac{9}{x} = \frac{1+x}{3} \Rightarrow x(1+x) = 9 \cdot 3$$

$$x = 9 \Rightarrow AF = 1 + x = 10$$

$$AF = 10 \quad \checkmark$$



$$2 + 2 = 9$$

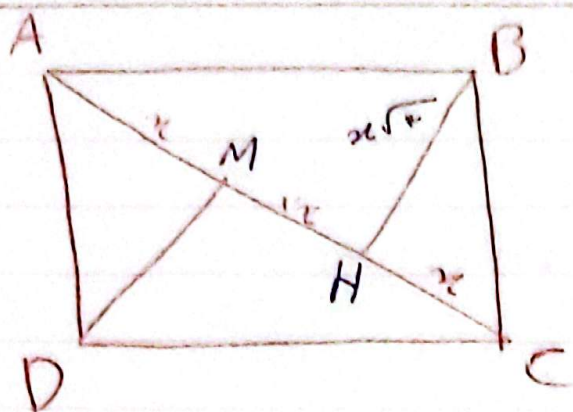
$$2 = 9 \Rightarrow B = 9$$

$$\frac{AG}{AB} = \frac{GD}{BC} \Rightarrow \frac{x+0,0}{1+x} = \frac{0,0}{1}$$

$$1x + 9 = 9,0 + 0,0x$$

$$19,0 = 9,0x$$

$$x = 9,9 \quad \checkmark$$



(1)

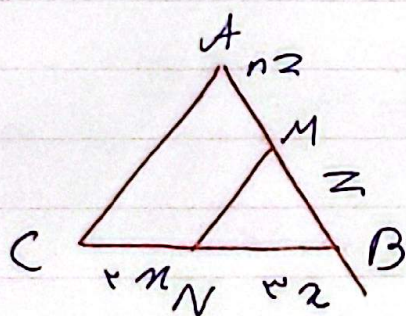
$$BH^2 = \overline{AH} \times \overline{HC} = x \times x = x^2 \Rightarrow BH = x\sqrt{2}$$

$$S_{\triangle ABC} = \frac{x\sqrt{2} \times x}{2} = \frac{x^2\sqrt{2}}{2}$$

$$S_{ABCD} = 2 \times S_{\triangle ABC} \Rightarrow 2\sqrt{2} x^2$$

$$S_{\triangle HBC} = \frac{x \times x\sqrt{2}}{2} = \frac{\sqrt{2}}{2} x^2$$

$$\frac{S_{ABCD}}{S_{\triangle HBC}} = \frac{2\sqrt{2} x^2}{\frac{\sqrt{2}}{2} x^2} = 4$$

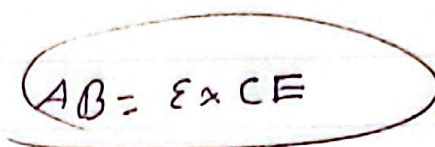


$$S_{ABC} = 2 S_{\triangle AMN}$$

(1)

$$n = \frac{\frac{1}{2} \sin \theta \times 2(n+x) \times nx}{\frac{1}{2} \sin \theta \times nx \times x} \Rightarrow \frac{n}{x} = n+x$$

$$\frac{BM}{AM} = \frac{1}{2} \left(\frac{BM}{AM} \right) \quad n = \frac{x}{2} \Rightarrow$$



$$x^2 + y^2 - xy = 1 \quad V$$

$$\frac{17}{5} \times \frac{16}{5} = \frac{272}{25} = 10.88 \checkmark$$

10,48

$$6D = 2FD + FD + (2FD)$$

$$CE = EG = GH$$

↓ ↓
4Pd 10Fe

$$\frac{BD}{FD} = \frac{9FD}{FD} = 9$$