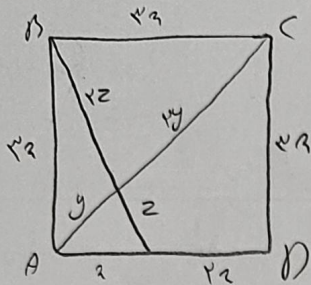


المسألة الأولى

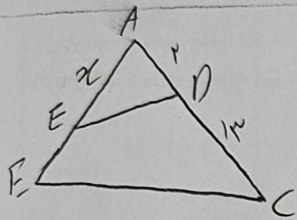
1A, V5



$$\sqrt{10^2 + 2^2} = 12 \Rightarrow Z = \frac{2\sqrt{10}}{5}$$

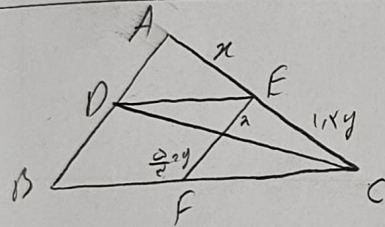
$$\sqrt{10^2 + 2^2} = 14 \Rightarrow Y = \frac{2\sqrt{10}}{5}$$

$$\frac{Z}{Y} = \frac{\frac{2\sqrt{10}}{5}}{\frac{2\sqrt{10}}{5}} = \frac{\sqrt{10}}{5} \checkmark$$



$$\frac{14}{10} = \frac{x}{10} \Rightarrow x^2 + 2 - 20 = 0 \Rightarrow (x+4)(x-16)$$

$$\Rightarrow x = -4 \text{ or } 16$$



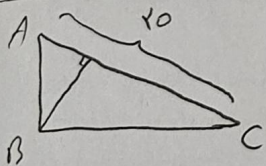
$$\frac{DE}{BC} = \frac{1}{2}$$

$$\frac{DE}{FC} = \frac{1}{2}$$

$$DE = BC \Rightarrow DE = 10 + FC$$

$$DE = 10 + \frac{1}{2} DE \Rightarrow DE = \frac{20}{3}$$

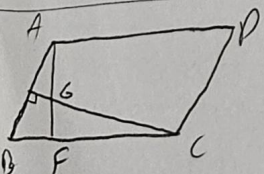
$$\frac{1}{2} DE = FC \Rightarrow \frac{1}{2} \times \frac{20}{3} = \frac{10}{3} = 3.33 \checkmark$$



$$AB^2 = 10^2 \Rightarrow AB = \sqrt{100} = 10 \checkmark$$

$$BC^2 = 14^2 + 10^2 \Rightarrow BC = \sqrt{340} = 18.44 \checkmark$$

$$\frac{\sqrt{340}}{\sqrt{100}} = \frac{18.44}{10} = 1.844 \checkmark$$



$$AFB \sim CFE$$

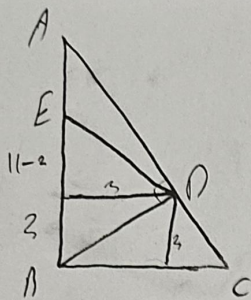
$$\frac{6}{FE} = \frac{14}{14} \Rightarrow FE = 6 \Rightarrow 14^2 + 14^2 - 6^2 = 0$$

$$\Rightarrow (14+14)(14-6)$$

$$\Rightarrow 14 - FE = -14 \checkmark$$

$$AF = 14 \checkmark$$

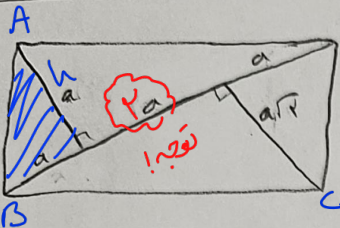
(2) - 9



$$x^2 = x(11 - x) \rightarrow x = 0 \times$$

$$\rightarrow x = \frac{11}{2} \checkmark$$

$$\frac{\frac{11}{2}}{11} = \frac{AE + \frac{11}{2}}{11 + AE} \Rightarrow AE = 4.4 \checkmark$$



$AH^2 = DH \times BA = a \times 2a \Rightarrow AH = \sqrt{2}a$

$CH^2 = BH \times DH = a \times a \Rightarrow CH = a$

$CH^2 + BH^2 = BC^2 \Rightarrow BC = \sqrt{4}a$

$AH^2 + BH^2 = AB^2 \Rightarrow AB = \sqrt{4}a$

(1) - 10

$$\frac{\sqrt{2}a}{a} = \sqrt{2}$$

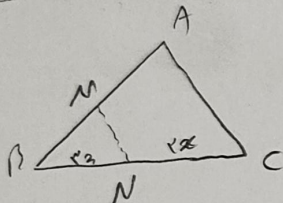
$$S_{AHD} = \frac{\sqrt{2}a \times a}{2} = \frac{\sqrt{2}}{2}a^2$$

$$S_{\text{مربع}} = \sqrt{2}a \times \sqrt{2}a = 2a^2$$

$$\frac{S_{\text{مربع}}}{S_{AHD}} = \frac{2a^2}{\frac{\sqrt{2}}{2}a^2} = 2\sqrt{2}$$

$$S_{\text{مربع}} = \frac{h \times \text{طول}}{2} = \frac{\sqrt{2}a^2}{2}$$

$$S_{\square} = 2S_{ABD} = 2 \times \frac{\sqrt{2}a \times a}{2} = \sqrt{2}a^2$$

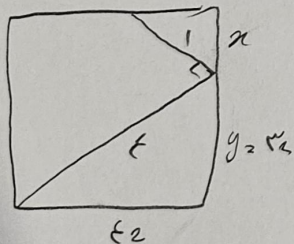


$$\frac{1}{2} \times 2 \times (AM + MB) \times \sin \beta = 2$$

$$\frac{1}{2} \times 2 \times BM \times \sin \beta$$

$$\frac{BM}{AM} = 1, \checkmark$$

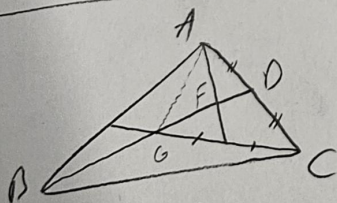
(2) - 1



$$14x^2 + 49x^2 = 14 \Rightarrow 20x^2 = 14 \Rightarrow x = \frac{7}{\sqrt{10}}$$

$$x = \frac{14}{10} \quad \frac{14}{10} \times \frac{14}{10} = 1.96 \checkmark$$

(2) - 9



$$\frac{FD}{DG} = \frac{1}{2} \Rightarrow DG = 2FD$$

$$\frac{DG}{BD} = \frac{1}{2} \Rightarrow \frac{2FD}{BD} = \frac{1}{2} \Rightarrow \frac{FD}{BD} = \frac{1}{4} \Rightarrow \frac{BD}{FD} = 4 \checkmark$$

10. یک خط عمود از G به BC و یک خط عمود از F به BC

(2)