

سوال (1)

$$\triangle AFE \sim \triangle BFC \quad \frac{AE}{BC} = \frac{EF}{BF} = \frac{AF}{FC} = \frac{1}{2}$$

$$BE = \sqrt{(2m)^2 + (3m)^2} = 2.5\sqrt{13} \quad \frac{FE}{BF} = \frac{1}{2} \rightarrow \frac{FE}{BE} = \frac{1}{3}$$

$$\frac{AF}{FC} = \frac{1}{2} \rightarrow \frac{AF}{AC} = \frac{1}{3} \quad AF = \frac{3\sqrt{13}m}{5}$$

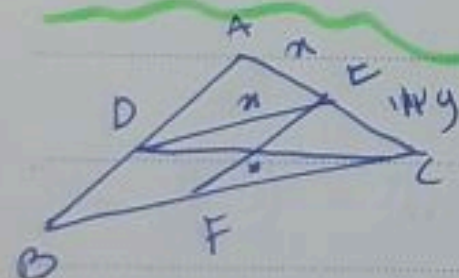
$$\frac{EF}{AF} = \frac{\frac{\sqrt{13}m}{3}}{\frac{3\sqrt{13}m}{5}} = \frac{5}{9} \quad \star \rightarrow FE = \frac{\sqrt{13}m}{9}$$

$$\triangle AED \sim \triangle ABC \quad \frac{ED}{BC} = \frac{AD}{AB} = \frac{AE}{AC}$$

سوال (2)

$$\frac{2}{x+1} = \frac{x}{b} \quad x^2 + x = 2b \rightarrow x^2 + x - 2b = 0$$

$$(x+4)(x-5) = 0 \quad x = -4 \text{ or } x = 5$$



$$x = 0.4 \rightarrow \frac{x}{y} = \frac{3}{5} \quad \triangle DHE \sim \triangle FHC$$

سوال (3)

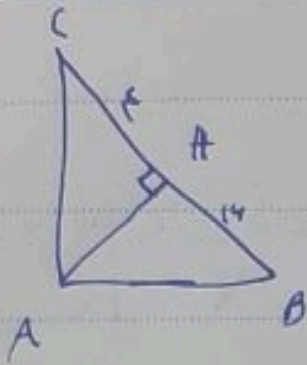
$$\frac{DE}{FC} = \frac{3}{5}$$

$$DE \parallel BC \rightarrow \frac{AE}{AC} = \frac{DE}{BC} = \frac{3}{5} \rightarrow \frac{AE}{AC} = \frac{1}{2}$$

$$x = \frac{3}{5}y$$

$$99 = 0.4x \Rightarrow x = \frac{99}{0.4} = 247.5 \quad \rightarrow BC = 0.4x = 99$$

$$\frac{DE}{FC} = \frac{3}{5} \rightarrow \frac{DE}{0.4x} = \frac{3}{5}$$



$$BC = 10$$

$$AC^2 = 4x^2$$

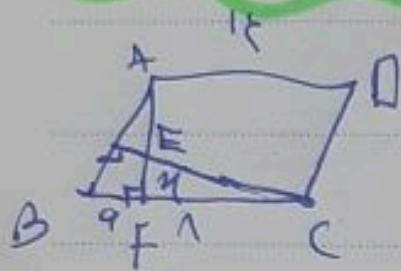
$$AC = 2\sqrt{x}$$

$$AB^2 = 14x^2$$

$$AB = 1\sqrt{14}$$

1 سوال (4)

$$\frac{AB}{AC} = \frac{1\sqrt{14}}{2\sqrt{x}} = 2$$



$$ABF \sim EFC$$

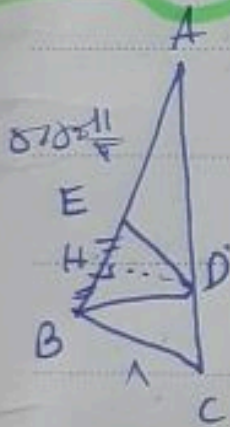
5 سوال (6)

$$\frac{AF}{x+y} = \frac{EC}{AF} = \frac{y}{y}$$

$$EF = 12, 14 \rightarrow x^2 + 14x - 144 = 0 \rightarrow (x+12)(x-12) = 0$$

$$x = -12 \quad \leftarrow$$

$$AF = 12, EC = 12$$



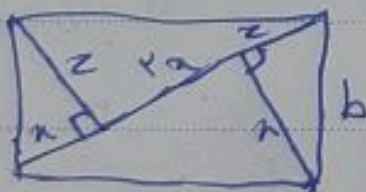
$$DH \parallel BC$$

10 سوال (4)

$$\frac{AD}{12+x} = \frac{DE}{12} = \frac{0}{12}$$

$$EF + 12 = 12 + 0 \Rightarrow 0 = 0$$

$$x + 12 = 12 \rightarrow x = 0$$



$$a^2 + 4a^2 + z^2 \rightarrow a^2 + 16a^2 \quad (\text{سوال 15})$$

$$a = 2\sqrt{14}a$$

$$b^2 = a^2 + z^2 \rightarrow b^2 = 4a^2 \Rightarrow b = 2a$$

$$z = \sqrt{14}a$$

$$a^2 + b^2 = 14a^2$$

$$1a^2 + z^2 + a^2 + 2z^2 = 14a^2 \rightarrow z^2 = 14a^2$$

$$z = \sqrt{14}a$$

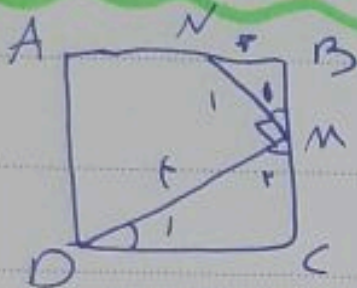


$$\frac{S_{ABC}}{S_{BMN}} = \frac{h_1 \times BC}{h_2 \times MN} \quad (\sim \sqrt{1/9})$$

$$\Rightarrow h_1 = 9h_2$$

$$h_1 \parallel h_2 \Rightarrow \frac{h_2}{h_1} = \frac{BM}{AB} = \frac{AM}{AB} = \frac{1}{9}$$

$$\frac{\frac{BM}{AB}}{\frac{AM}{AB}} = \frac{BM}{AM} = \frac{2}{1}$$



$$\left. \begin{aligned} M_1 + M_2 &= 9.7 \\ M_2 + D_1 &= 9. \end{aligned} \right\} D_1 = M_1$$

(سوال 9)

$\hookrightarrow D_1 = M_1$

$$BM \perp CD$$

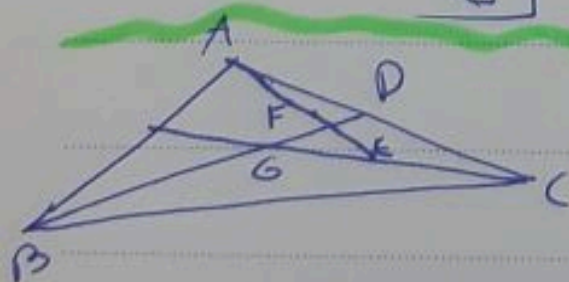
$$\frac{CD}{MB} = \frac{MC}{BN} = \frac{MD}{NK} = 9$$

$$MC = \frac{1}{9} CD \rightarrow \left(\frac{1}{9} CD\right)^2 + (CD)^2 = 14$$

$$\frac{1}{81} CD^2 + CD^2 = 14 \rightarrow CD = 14$$

$$S = (CD)^2 = \frac{196}{81}$$

15



$$GD = \frac{1}{9} BD$$

(سوال 10)

$$FD = \frac{1}{9} DG \rightarrow FD = \frac{1}{9} BD$$

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