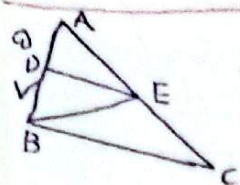
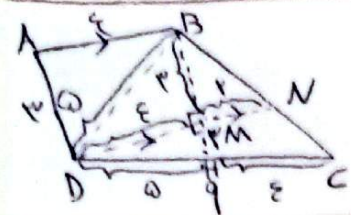


۱- (۲)

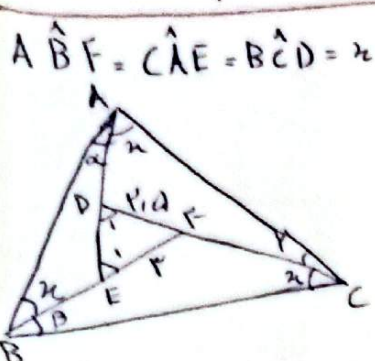


$$\frac{AD}{AB} = \frac{DE}{BC} \Rightarrow \frac{3}{12} = \frac{4}{BC} = \frac{1}{3} \Rightarrow BC = 12$$

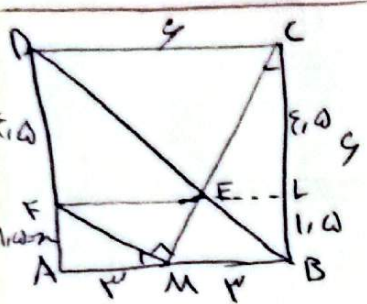
$$\frac{S_{BCE}}{S_{BDE}} = \frac{BC}{DE} = \frac{14}{4} = 3.5$$



۲. به کمک شکل دو تالس می توانیم یکی مثلث BCH است و بعد به کمک تالس و داده های سوال می توان قاطعه M و N را حساب کرد. (۲)



۳. $\hat{A}BF = \hat{C}AE = \hat{B}CD = \alpha$ $E_1 \Rightarrow E_1 = \alpha + \alpha = \hat{A}$ $D_1 \Rightarrow BD_1 = \alpha + \gamma = \hat{C}$
 $\triangle DEF \sim \triangle ABC \Rightarrow \frac{DF}{BC} = \frac{EF}{AB} \Rightarrow \frac{1.5}{14} = \frac{3}{AB} \Rightarrow AB = 9.6$ (۲)



$$\frac{CB}{MA} = \frac{MB}{FA} \Rightarrow \frac{4}{3} = \frac{3}{2} \Rightarrow 2 = 1.5$$

$$\frac{DF}{DA} = \frac{FE}{AB} \Rightarrow \frac{1.5}{6} = \frac{FE}{6} \Rightarrow FE = 1.5$$

$$\frac{CL}{LB} = \frac{CE}{EM} \Rightarrow \frac{1.5}{11.5} = \frac{CE}{EM} \Rightarrow EM = CE$$

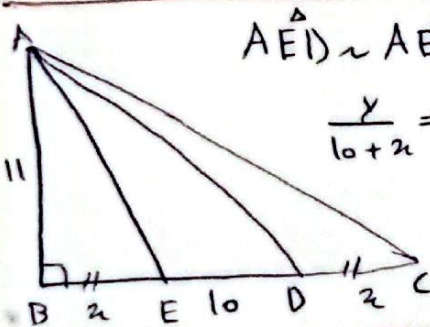
$$3.5 + 9 = 12.5 \Rightarrow \sqrt{12.5} = 3.5 \Rightarrow 3.5 = CE + ME \Rightarrow EM = 3.5$$

$$\Rightarrow ME = 3.5$$

$$\frac{1.5}{6} + 2x = \frac{11}{6} \Rightarrow 2x = \frac{9}{6} = \frac{3}{2} = 1.5$$

$$\Rightarrow S_{FEM} = \frac{1}{2} \times \frac{3.5}{2} = \frac{12.5}{4}$$

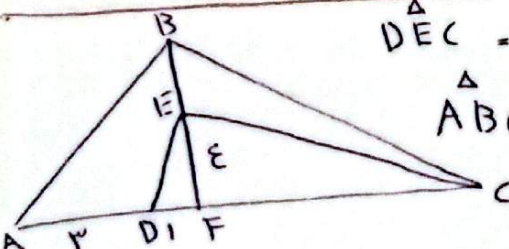
ریاضی آریتمتیک ۱۴۰۳ داخل جواب = $\frac{15}{4}$ (۱۵/۴)



$$\triangle AED \sim \triangle AEC$$

$$\frac{x}{10+2} = \frac{10}{x} \Rightarrow x^2 = 100 + 102 \xrightarrow{\text{نیمه غرض}} x^2 + 11 = 100 + 102$$

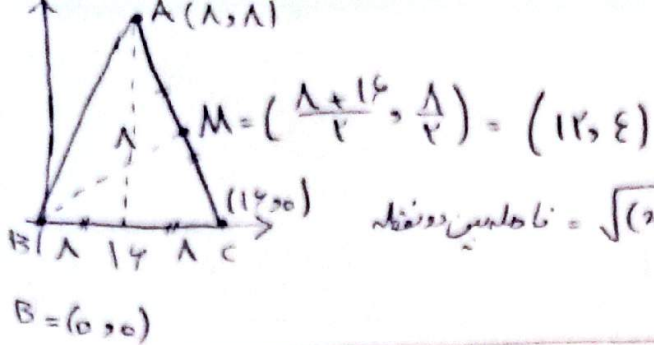
$$\Rightarrow x^2 - 102x + 11 = 0 \rightarrow x = 33 \text{ و } x = 7$$



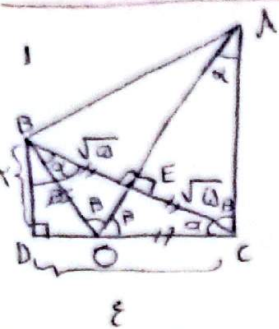
$$\triangle DEC = EF^2 = DF \times FC \Rightarrow 1^2 = 1 \times FC \Rightarrow FC = 14$$

$$\triangle ABC = BF^2 = AF \times FC \Rightarrow BF^2 = 3 \times 14 \Rightarrow BF = 7$$

$$\triangle BFC: BC^2 = BF^2 + FC^2 \Rightarrow BC^2 = 7^2 + 14^2 \Rightarrow BC = 15.65$$



$$AB = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2} = \sqrt{1^2 + 1^2} = \sqrt{2} = \sqrt{2} \cdot 10 \quad \checkmark$$

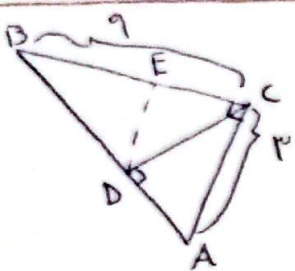


$$\triangle CEO \cong \triangle BEO \Rightarrow BE = CE$$

$$BC = 14 + 14 = 28 \Rightarrow BC = 2\sqrt{2}$$

$$\triangle BCD \sim \triangle ABE \Rightarrow \frac{BD}{DC} = \frac{BE}{AE} \Rightarrow \frac{1}{1} = \frac{\sqrt{2}}{AE} \Rightarrow AE = \sqrt{2}$$

$$S_{ABE} = \frac{1}{2} \times \sqrt{2} \times \sqrt{2} = 1 \quad \checkmark$$

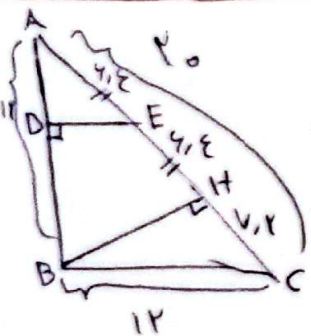


$$BA^2 = CB^2 + CA^2 \Rightarrow BA^2 = 1 + 9 = 10 \Rightarrow BA = \sqrt{10}$$

$$\frac{BA \times DC}{2} = \frac{BC \times CA}{2} \Rightarrow \sqrt{10} \times DC = 2 \times 9 \Rightarrow DC = \frac{9}{\sqrt{10}}$$

$$DC^2 = CE \times CB \Rightarrow \left(\frac{9}{\sqrt{10}} \right)^2 = CE \times 9 \Rightarrow CE = 0.9$$

$$BE = BC - CE \Rightarrow BE = 9 - 0.9 = 8.1 \quad \checkmark$$



$$BC^2 = HC \times AC \Rightarrow 14^2 = HC \times 20 \Rightarrow HC = 10$$

$$AH = 20 - 10 = 10$$

$$AC = \sqrt{14^2 + 10^2} = 20$$

$$\frac{AD}{AB} = \frac{DE}{BC} \Rightarrow \frac{10}{14} = \frac{DE}{14} \Rightarrow DE = 10 \quad \checkmark$$