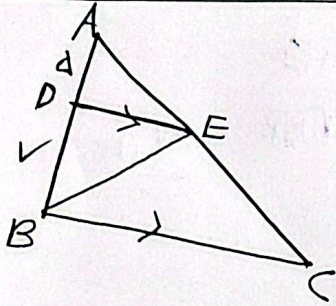
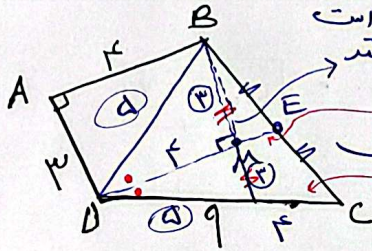


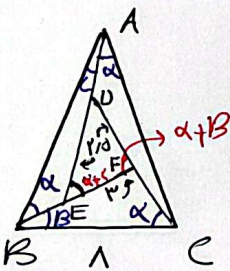


$$\frac{S_{BCE}}{S_{BDE}} \xrightarrow{\text{دو ارتفاع و ارتفاع برابر}} \frac{BC}{DE} = \frac{12}{5} = 2,4$$



چون نسبت به هر دو ارتفاع است
در مثلث هم نسبت هستند

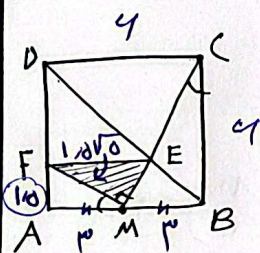
$$\Rightarrow \frac{ME}{F} = \frac{3}{6} \Rightarrow ME = 2$$



$$\hat{E} = \hat{A} \Rightarrow DEF \sim ABC$$

$$\Rightarrow \frac{DE}{BC} = \frac{EF}{AB}$$

$$\Rightarrow \frac{10}{12} = \frac{3}{AB} \Rightarrow AB = \frac{36}{10} = 3,6$$



$$\hat{A}MF \sim \hat{M}CB \Rightarrow \frac{3}{9} = \frac{M}{3} \Rightarrow M = 1,0$$

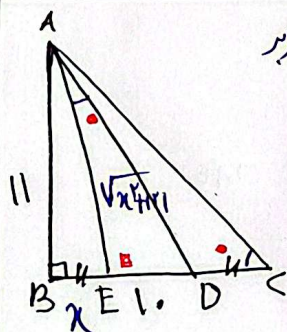
$$FM = \sqrt{9 + 1,0} = \sqrt{10}$$

$$\frac{9}{3} = \frac{MC}{1,0\sqrt{10}} \Rightarrow MC = 3\sqrt{10}$$

$$\hat{M}BE \sim \hat{D}CE$$

$$\frac{ME}{3\sqrt{10}} = \frac{3}{9} \Rightarrow ME = \sqrt{10}$$

$$\Rightarrow S = \frac{\sqrt{10} \times 1,0\sqrt{10}}{2} = \frac{10}{2} = 5$$

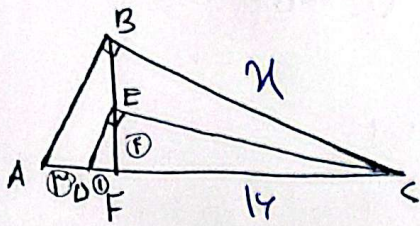


$$\hat{A}EC \sim \hat{A}ED \Rightarrow \text{نظایر برابر}$$

$$\frac{ED}{AE} = \frac{AE}{EC} \Rightarrow \frac{1}{\sqrt{n^2+121}} = \frac{\sqrt{n^2+121}}{1+n}$$

$$\Rightarrow n^2 + 121 = 1 \cdot n + 1 \Rightarrow n^2 - 1 \cdot n + 120 = 0$$

$$(n-5)(n-24) = 0 \Rightarrow n = 5$$

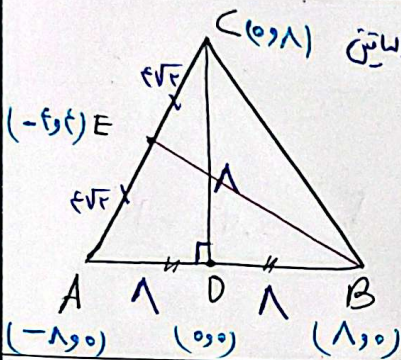


$$EF^2 = 1 \times FC \rightarrow FC = 13$$

$$BC^2 = FC \times AC \Rightarrow BC^2 = 13 \times 14$$

$$\Rightarrow BC = \sqrt{182} = 13\sqrt{2}$$

6

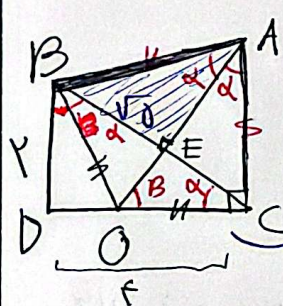


$$AC = \sqrt{1^2 + 1^2} = \sqrt{2}$$

$$\Rightarrow AE = EC = \sqrt{2}$$

$$\Rightarrow BE = \sqrt{1^2 + 1^2} = \sqrt{2} = \sqrt{14} = 2\sqrt{1}$$

7



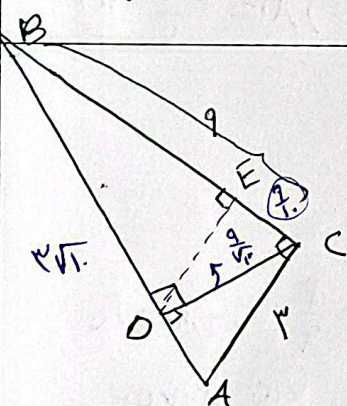
$$S_{ABE} = ?$$

$$BC^2 = F \times 14 \Rightarrow BC = \sqrt{14} \Rightarrow BE = \sqrt{8}$$

$$\tan \alpha = \frac{1}{F} \rightarrow \frac{\sqrt{8}}{AE} = \frac{1}{F} \Rightarrow AE = \sqrt{8}$$

$$\Rightarrow S = \frac{\sqrt{8} \times \sqrt{8}}{2} = \frac{8}{2} = 4$$

8



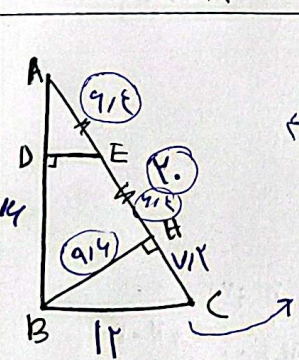
$$AB = \sqrt{1^2 + 1^2} = \sqrt{2}$$

$$DE = \frac{1 \times 9}{\sqrt{2}} = \frac{9}{\sqrt{2}}$$

$$9 = \frac{1}{1} + DA^2 \Rightarrow DA^2 = \frac{9}{1} \Rightarrow DA = \frac{3}{1}$$

$$\frac{1}{1} = EC \times 9 \Rightarrow EC = \frac{9}{1} \Rightarrow BE = 9 - \frac{9}{1} = \frac{1}{1} = 1$$

9



$$AB^2 + BC^2 = AC^2 \rightarrow 1^2 + 1^2 = 2$$

$$1 \times 1 = 1 \times BH \Rightarrow BH = 1$$

$$1^2 = 9/4 + HC^2 \Rightarrow HC = \sqrt{5/4} = \sqrt{5}/2$$

$$\frac{1 \times \sqrt{5}}{2} = AE \Rightarrow AE = \sqrt{5}/2$$

$$\frac{DE}{BC} = \frac{AE}{AC} \Rightarrow \frac{DE}{1} = \frac{\sqrt{5}/2}{2} \Rightarrow DE = \sqrt{5}/4$$

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