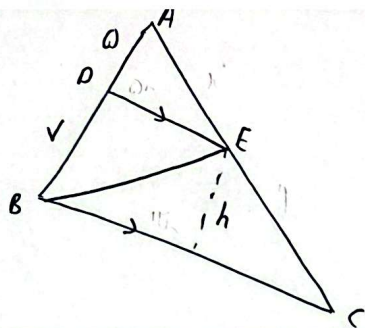
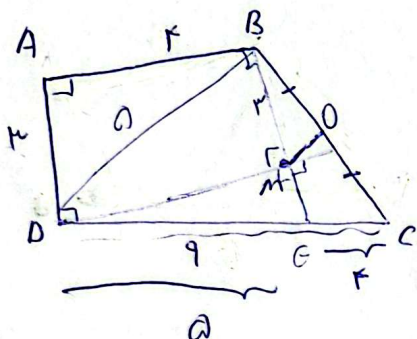




$$\frac{AD}{AB} = \frac{DE}{BC} = \frac{h_1}{h} \rightarrow DE = 12h$$

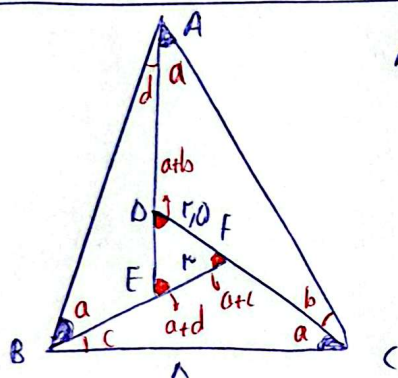
$$BDE, BEC \rightarrow h_1 = h_r \rightarrow \frac{S_{BCE}}{S_{BDE}} = \left[\frac{12}{1} \right] = 12$$

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$$D_1 = D_r \rightarrow DHG \cong DMB \rightarrow DB = DG = 12$$

$$\frac{BM}{BG} = \frac{MO}{GC} = \frac{1}{2} = \frac{1}{2} \rightarrow MO = 1$$



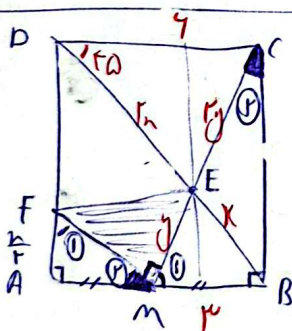
$$\hat{A}BF = \hat{CAE} = \hat{BCD}$$

$$\frac{DF}{EF} = \frac{BC}{AB} \rightarrow \frac{12}{1} = \frac{1}{1} \rightarrow \lambda = 12$$

$$F = B = a + c$$

$$D = C = a + b$$

$$E = A = a + d$$



$$\hat{BCE} = \hat{AMF}$$

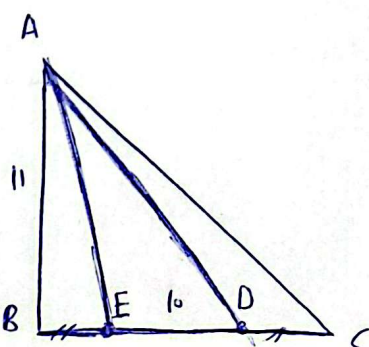
$$\tan \theta = \frac{AM}{AF} = \frac{BC}{MB} \rightarrow AF = \frac{12}{1}$$

$$MF = \sqrt{12^2 + 1} = 12.04$$

$$DCE, MFB \rightarrow \frac{DCE}{MFB} = 1 \rightarrow y = \sqrt{12^2 + 1} = 12.04$$

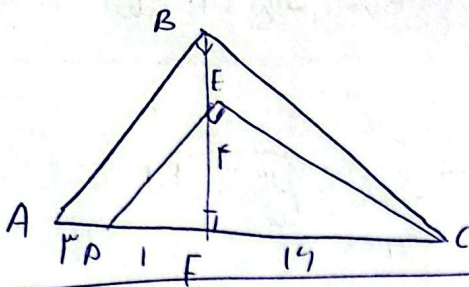
$$y = \sqrt{10}$$

$$SFEM = \frac{1}{2} \times MF \times EM = \frac{1}{2} \times 12.04 \times 1 = 6.02$$



$$\hat{\alpha} = \hat{\alpha} \rightarrow \hat{E} = \hat{E} \rightarrow \hat{D}_1 = \hat{A} \rightarrow \frac{AE}{ED} = \frac{EC}{AE}$$

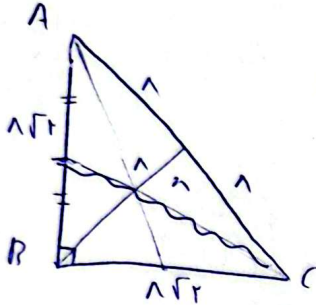
$$\Rightarrow \frac{\sqrt{12^2 + 1}}{1} = \frac{12 + 1}{\sqrt{12^2 + 1}} \rightarrow \lambda = 12$$



$$DE \times FC = (FE)^2 \rightarrow FC = 14$$

$$(BC)^2 = FC \times AC = 14 \times r \rightarrow \boxed{BC = \sqrt{14r}}$$

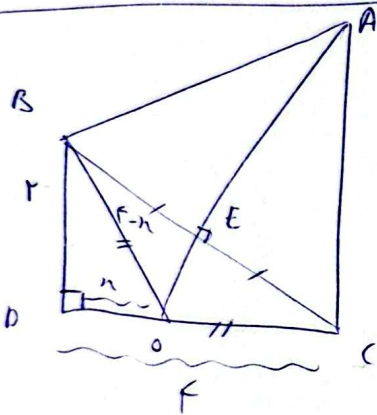
-4



$$n^2 = \sqrt{(n^2)^2 + (r^2)^2} = \sqrt{14^2 + r^2} = r\sqrt{14}$$



-V



$$BC = \sqrt{r^2 + r^2} = r\sqrt{2}$$

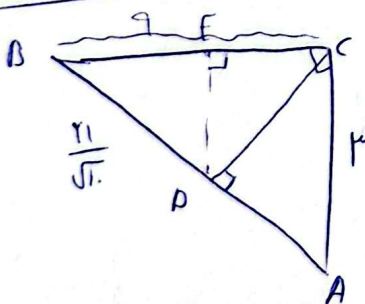
$$(r-n)^2 = r^2 + n^2 \rightarrow n^2 - 2nr + 14 = n^2 + r^2 \rightarrow n = \frac{r}{2}$$

$$OE = \frac{\sqrt{2}}{r} \rightarrow r = \frac{r}{r} = \frac{2}{r} \quad OE \perp AC \rightarrow OE = \left(\frac{2}{r}\right)^2 - (\sqrt{2})^2 = \frac{2}{r} = OE$$

$$\rightarrow AD \times OE = OC^2 \rightarrow AD \times \frac{\sqrt{2}}{r} = \left(\frac{2}{r}\right)^2 \rightarrow AD = \frac{4}{r\sqrt{2}}$$

$$\rightarrow S_{ABE} = \frac{1}{2} \times \sqrt{2} \left(\frac{4}{r}\right) = \frac{2}{r}$$

-A

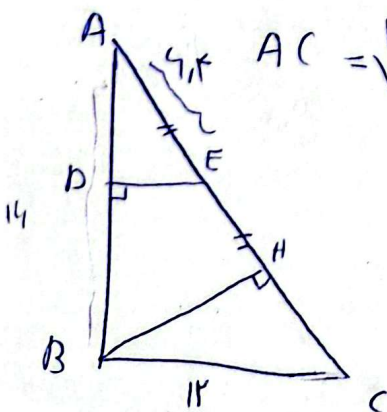


$$BC^2 = BD \times AB \rightarrow 9^2 = BD \times \sqrt{14} = BD \times \frac{14}{\sqrt{14}} = \frac{14}{\sqrt{14}}$$

$$BD^2 = BE \times RC \rightarrow \left(\frac{14}{\sqrt{14}}\right)^2 = BE \times 9$$

$$BE = \frac{14 \times 14}{9} = \frac{196}{9}$$

-9



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

$$AC \times AH = AB^2 \rightarrow 14\sqrt{2} \times AH = 14^2$$

$$\frac{AE}{AC} = \frac{DE}{BC} \rightarrow \frac{4\sqrt{2}}{14\sqrt{2}} = \frac{DE}{14}$$

$$\rightarrow DE = \frac{4\sqrt{2}}{14\sqrt{2}} = \frac{4}{14} = \frac{2}{7}$$

-10