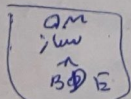
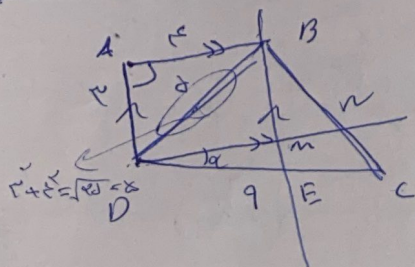


$$EH' = BH$$

$$\frac{S_{BDE}}{S_{BEC}} = \frac{\frac{EH \times BH}{2}}{\frac{BH \times BE}{2}} = \frac{EH}{BE} = \frac{r}{a}$$

(مسألة ١)

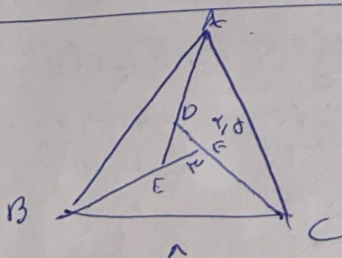
-1



$$BDE = BD = DE = a \quad EC = DC - DE = a - a = 0$$

$$BM = ME = r$$

$$\frac{BM}{ME} = \frac{BN}{NC} \rightarrow MN \parallel EC \rightarrow \frac{MN}{EC} = \frac{r}{a} \rightarrow MN = r$$



$$\frac{DF}{BC} = \frac{r}{a} \rightarrow a = 4r$$

$$BM = AM = r \quad BM \parallel DC \rightarrow BME \sim DEC \rightarrow \frac{ME}{CE} = \frac{BM}{DC} = \frac{r}{4r} = \frac{1}{4}$$

$$BCM = CM = BC + BM = 4r + r = 5r \rightarrow CM = r\sqrt{5} \rightarrow ME = \sqrt{5}r, CE = 4\sqrt{5}r$$

$$AMF \sim BCM = \frac{AM}{BC} = \frac{MF}{MC} = \frac{r}{5r} = \frac{MF}{r\sqrt{5}} \rightarrow MF = \frac{r}{\sqrt{5}}$$

$$S_{MFE} = \frac{1}{2} \times ME \times MF = \frac{1}{2} \times \sqrt{5}r \times \frac{r}{\sqrt{5}} = \frac{r^2}{2} = \frac{1}{2}r^2$$

$$ABE = AE^2 = AB^2 + BE^2 \rightarrow 11 + m^2 = AE^2 = \sqrt{11 + m^2}$$

$$AEC \sim ACD \rightarrow \frac{AE}{ED} = \frac{EC}{AE} = AE^2 = ED \times EC$$

$$(11 + m^2) = 10(1 + m)$$

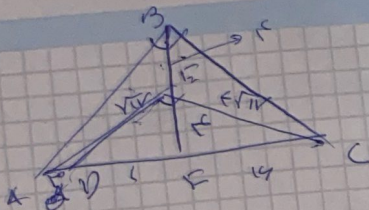
$$11 + m^2 + 10 + 10m \rightarrow m^2 - 10m + 21 = 0$$

$$(m - 7)(m - 3) = 0$$

$$m = 3, 7$$

(8)

NOTE NOTE



$$ED = \sqrt{1+14} = \sqrt{15}$$

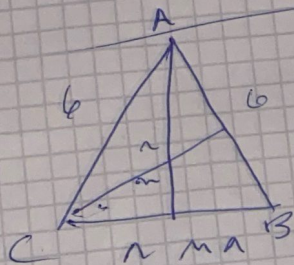
$$EF = DF \times FC \rightarrow FC = 14 \rightarrow EC = 14 \times \sqrt{15}$$

$$BF^2 = 1 \times 14 \rightarrow BF \rightarrow \sqrt{14} = 1$$

$$BC^2 = 1^2 + 14^2 = 197$$

$$BC = \sqrt{197}$$

$$EC = \sqrt{15}$$

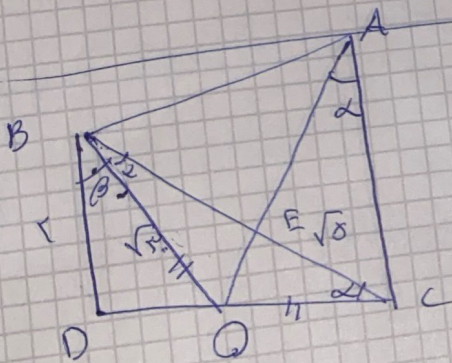


$$b^2 + b^2 = 16 \rightarrow 2b^2 = 16 \rightarrow b^2 = 8$$

$$b = \sqrt{8}$$

$$\sqrt{(1\sqrt{5})^2 + (2\sqrt{5})^2} = \sqrt{1+4+4+4} = \sqrt{14}$$

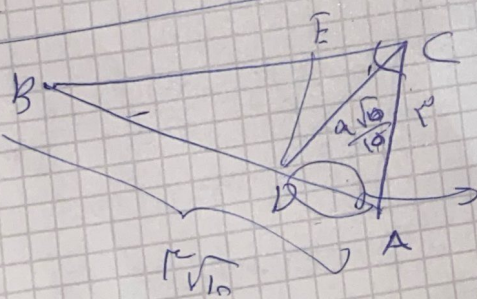
$$\sqrt{14} = \sqrt{14}$$



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

$$\frac{1}{\sqrt{2}} = \frac{1}{AB} = \frac{1\sqrt{2}}{AE \times CE} \rightarrow AE = 2\sqrt{2}$$

$$S_{ABE} = \frac{AE \times CE}{2} = \frac{2\sqrt{2} \times \sqrt{2}}{2} = 2$$



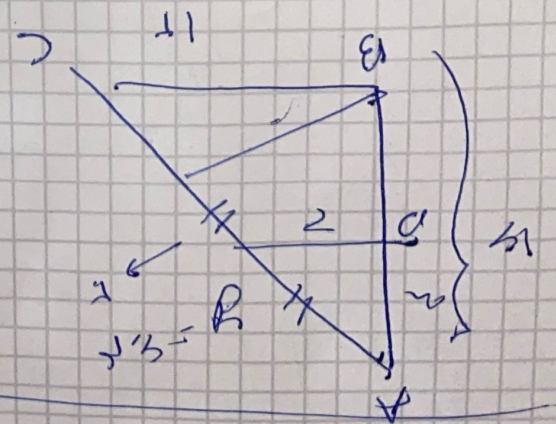
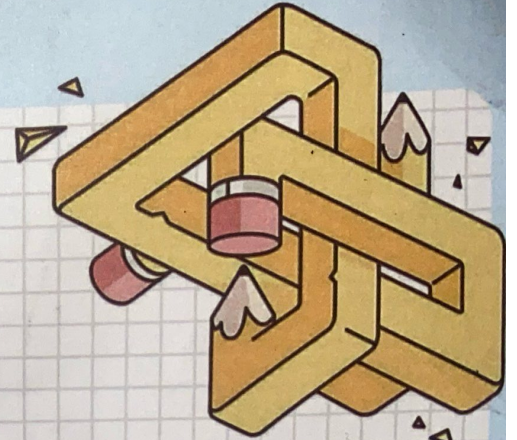
$$\sqrt{1^2 + 1^2} = \sqrt{2}$$

$$\triangle DAC \sim \triangle ABC \rightarrow \frac{AC}{AB} = \frac{DA}{AC} = \frac{DC}{BC}$$

$$\frac{1}{\sqrt{2}} = \frac{1}{AB} = \frac{1\sqrt{2}}{AE \times CE} \rightarrow AE = 2\sqrt{2}$$

$$\triangle BDE \sim \triangle ABC \rightarrow \frac{ED}{AC} = \frac{EB}{BC} = \frac{BD}{BA}$$

$$\frac{ED}{1} = \frac{EB}{1} = \frac{BD}{1} \rightarrow EB = 1$$



$$\frac{1}{2}v^2 = z \leftarrow \frac{v^2}{2} = \frac{v^2}{2}$$

$$ABC \sim ADE \rightarrow \frac{AB}{AD} = \frac{AC}{AE} = \frac{BC}{DE} \quad (1)$$