

$$\frac{BC}{AE} = \frac{1}{x} = 1, \frac{FC}{FA} = x, FC = x, FB = 1-x$$

$$\Rightarrow AB^2 = BE^2 + AE^2 \Rightarrow BE^2 = x^2 + (1-x)^2 \Rightarrow BE^2 = 1 - 2x + 2x^2 \Rightarrow BE = \sqrt{1 - 2x + 2x^2}$$

$$A \times E \times D \Rightarrow AC^2 = AE^2 + CD^2 \Rightarrow AC^2 = (1-x)^2 + (1-x)^2 = AC^2 = 1 - 2x + 2x^2 \Rightarrow AC = \sqrt{1 - 2x + 2x^2}$$

$$\hookrightarrow \triangle AEF, \triangle BFC \Rightarrow \text{متشابه اند} \Rightarrow \begin{cases} F_1 = F_2 \\ C_1 = A_1 \end{cases} \hookrightarrow \frac{EF}{AF} = \frac{1}{x} = \frac{1}{x} = \frac{BE}{AC} = \frac{\sqrt{1 - 2x + 2x^2}}{\sqrt{1 - 2x + 2x^2}} \quad \left(\frac{\sqrt{1 - 2x + 2x^2}}{\sqrt{1 - 2x + 2x^2}} \right)$$

$$\rightarrow \triangle AED, \triangle ACB \Rightarrow \text{متشابه اند} \Rightarrow \frac{AE}{AC} = \frac{AD}{AB} = \frac{ED}{CB} \Rightarrow \frac{x}{1} = \frac{x}{1} = \frac{ED}{1} \Rightarrow ED = x$$

$$\Rightarrow x^2 + x^2 = 1 \Rightarrow 2x^2 = 1 \Rightarrow x = \frac{1}{\sqrt{2}}$$

$$2y = 1 \Rightarrow y = \frac{1}{2}$$

$$\hookrightarrow x = \frac{1}{2}$$

$$\hookrightarrow y = \frac{1}{2}$$

$$DE \parallel BC \Rightarrow \frac{DE}{BC} = \frac{AE}{AC} = \frac{1-x}{1} = \frac{1}{2} \Rightarrow DE = \frac{1}{2}$$

$$\triangle DEH, \triangle FHC \Rightarrow \text{متشابه اند} \Rightarrow \frac{HE}{HF} = \frac{1}{2} \Rightarrow HE = \frac{1}{2} \Rightarrow HF = \frac{1}{2}$$

$$BC \Rightarrow 1 + \frac{1}{2} \Rightarrow 1 + \frac{1}{2} = \frac{3}{2} \Rightarrow \frac{3}{2}$$

$$AB^2 = BH \times BC$$

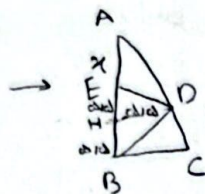
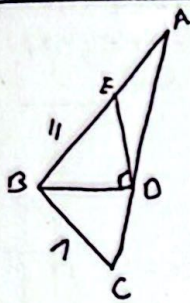
$$AC^2 = CH \times BC$$

$$\hookrightarrow \frac{AB^2}{AC^2} = \frac{BH}{CH} \Rightarrow \frac{1}{1} = \frac{BH}{CH} \Rightarrow BH = CH = \frac{1}{2}$$

$$\Rightarrow \triangle ABF, \triangle CEF \Rightarrow \text{متشابه اند} \Rightarrow \frac{AB}{CE} = \frac{AF}{CF} = \frac{BF}{EF}$$

$$\hookrightarrow \frac{1}{1+x} = \frac{1}{1+x} = \frac{1}{1+x} \Rightarrow 1 = 1 \Rightarrow 1 = 1$$

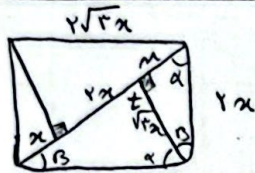
$$\Rightarrow x^2 + 1 - 1 = 0 \Rightarrow x^2 = 0 \Rightarrow x = 0$$



$$\frac{AH}{AB} = \frac{DH}{BC} \Rightarrow \frac{a/d + x}{11 + x} = \frac{a/d}{1}$$

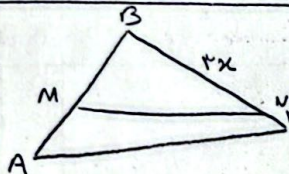
$$\Rightarrow 11x + 11x = 11a/d + 11x \rightarrow 11x = 11a/d$$

$$\Rightarrow x = \frac{11a/d}{11} = \frac{11}{11} = 1$$



$$\tan B = \frac{x}{t} = \frac{t}{\sqrt{x}} \Rightarrow t = \sqrt{x}$$

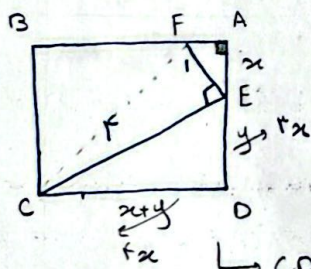
$$\frac{S_{\text{triangle}}}{S_{\text{square}}} = \frac{11 \times \sqrt{x} + \sqrt{x} \times \sqrt{x}}{\sqrt{x} \times \sqrt{x}} = 1$$



$$S_{ABC} = 11 S_{BMN} \rightarrow \frac{1}{2} BN \times BM \times \sin B$$

$$\Rightarrow \frac{1}{2} BC \times AB \times \sin B = 11 \times \frac{1}{2} BN \times BM \times \sin B$$

$$\hookrightarrow a \times x \times AB = 11 \times \frac{1}{2} \times BM \Rightarrow \frac{BM}{AB} = \frac{a}{11} \Rightarrow \frac{BM}{AB - BM} = \frac{a}{11 - a} = \frac{a}{7} = 1/7$$

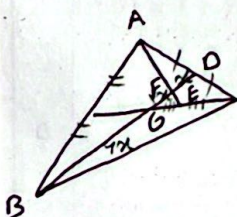


$$AEF \sim CDE$$

$$\hookrightarrow \frac{f}{1} = \frac{x+y}{x} \Rightarrow 11x = y$$

$$\hookrightarrow CDE \Rightarrow ax = f \rightarrow x = 0.11$$

$$\rightarrow AD = f(0.11) = 1.1 \Rightarrow S_{\text{area}} = (1.1)^2 = 1.21$$



$$GD, AE (\text{موازي}) \Rightarrow \text{مثلثات متشابهة} \Rightarrow FD = x$$

$$BG = 4x$$

$$BD = 9x$$

$$BD = 9x$$

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