

$$ED = 2AE \rightarrow AE + ED = AD = 3x = AB$$

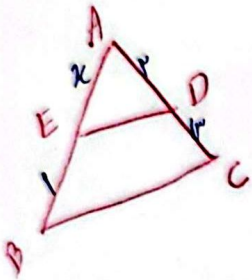
$$\frac{EF}{AF} = ? \quad \left. \begin{array}{l} AE \parallel BC, \angle E = \angle C \\ AE \parallel BC, \angle A = \angle B \end{array} \right\} \Rightarrow \triangle AEF \sim \triangle CBF \Rightarrow \frac{BF}{EF} = \frac{CB}{AE} = \frac{FC}{FA} = 2$$

$$\Rightarrow BF = 2EF = 2y, FC = 2FA = 2z$$

$$\triangle ABE: AB + AE = BE \Rightarrow 3x + x = 4x \Rightarrow 1 \cdot x + 3 \cdot x = 4x$$

$$\triangle ADC: AD + DC = AC \Rightarrow 3x + 3x = 6x \Rightarrow 1 \cdot x + 5 \cdot x = 6x \Rightarrow EF = y = \frac{\sqrt{2}}{2} x$$

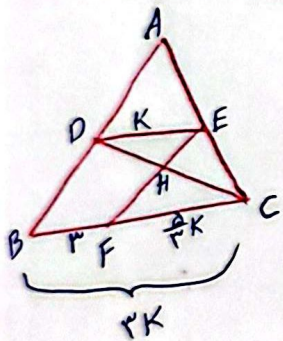
$$\Rightarrow AF = \frac{2}{\sqrt{2}} x = \frac{\sqrt{2}}{1} x \Rightarrow \frac{EF}{AF} = \frac{\sqrt{2}}{2}$$



$$\triangle AED \sim \triangle ACB \quad \left. \begin{array}{l} \angle A = \angle A \\ \angle AED = \angle ACB \end{array} \right\} \Rightarrow \frac{AE}{AC} = \frac{AD}{AB}$$

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

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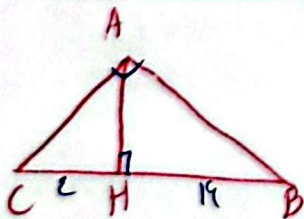
$$BF = 3, y = 2x \Rightarrow y = 2x$$

$$DE \parallel BC \Rightarrow \frac{AE}{AC} = \frac{DE}{BC} = \frac{x}{1+2} = \frac{1}{3}$$

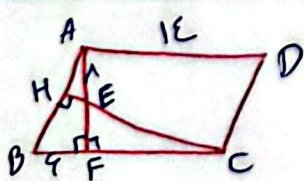
$$\Rightarrow DE = \frac{1}{3} BC = 1$$

$$\triangle ADE \sim \triangle ABC \quad \left. \begin{array}{l} \angle A = \angle A \\ \angle ADE = \angle ABC \end{array} \right\} \Rightarrow \frac{AE}{AC} = \frac{AD}{AB} = \frac{DE}{BC} = \frac{1}{3}$$

$$BC = BF + FC \Rightarrow 3K = \frac{1}{3}K + 3 \Rightarrow \frac{2}{3}K = 3 \Rightarrow K = \frac{9}{2} \Rightarrow DE = \frac{1}{3}K = \frac{3}{2}$$



$$BH = 1, CH = 1 \quad \left. \begin{array}{l} AB = BH \times BC \\ AC = CH \times BC \end{array} \right\} \Rightarrow \frac{AB}{AC} = \frac{BH}{CH} = \frac{1}{1} = 1$$



$$AD = 1, AE = 1, BF = 1, AF = ? \quad \left. \begin{array}{l} \triangle AEF \sim \triangle CBF \\ \triangle AFB \sim \triangle CFE \end{array} \right\} \Rightarrow \frac{BF}{FE} = \frac{AF}{FC} = 1$$

$$\Rightarrow (FE+1)FE = 1 \Rightarrow FE^2 + FE - 1 = 0 \Rightarrow FE = \frac{-1 \pm \sqrt{5}}{2}$$

$$AF = FE + AE = \frac{-1 \pm \sqrt{5}}{2} + 1 = \frac{1 \pm \sqrt{5}}{2}$$


$$\Rightarrow DH_{\text{جاء}} \Rightarrow HE = BH = \omega, \omega = HD$$

A rectangle ABCD is shown with vertices A (top-left), B (top-right), C (bottom-right), and D (bottom-left). Diagonals AC and BD intersect at point H. The segments AH, BH, CH, and DH are all labeled with the variable x , indicating that the diagonals bisect each other. The right angles at the intersection point H are labeled with x' .

Diagram of triangle ABC with a line segment DF . D is on side AB and F is on side BC . Angle BDF is labeled $1x$ and angle BCF is labeled $1x$.

