

11, 5

11 A

نام و نام خانوادگی کلاس شماره تکلیف شریعی

$$\frac{AE}{BC} = \frac{x}{12} = \frac{1}{3} \Rightarrow \frac{AF}{AC} = \frac{1}{3} \Rightarrow AC = 3 \sqrt{2} \Rightarrow \frac{AF}{3 \sqrt{2}} = \frac{1}{3} \Rightarrow AF = \frac{3 \sqrt{2}}{3}$$

$$\frac{EF}{EB} = \frac{1}{3} = \frac{EF}{2 \sqrt{2}} \Rightarrow EF = \frac{2 \sqrt{2}}{3}$$

$$\frac{EF}{AF} = \frac{2 \sqrt{2}}{3} = \frac{\sqrt{2}}{3} \times \frac{\sqrt{2}}{1} = \frac{2}{3} = \frac{\sqrt{2}}{3}$$

$$BE^2 = 2^2 + 9 = 13 \Rightarrow BE = \sqrt{13}$$

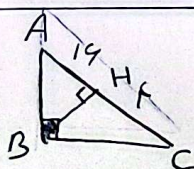
$$\hat{E} = \hat{C}, \hat{A} = \hat{A} \Rightarrow EAD \sim BAC \Rightarrow \frac{AD}{AB} = \frac{AE}{AC} \Rightarrow \frac{2}{2+1} = \frac{x}{12}$$

$$\Rightarrow 2 + x = 3 \Rightarrow x = 1$$

$$DEH \sim FHC \Rightarrow \frac{EH}{FH} = \frac{DE}{FC} \Rightarrow \frac{x}{y} = \frac{a}{FC} \Rightarrow \frac{a}{FC} = \frac{1}{3} \Rightarrow FC = \frac{a}{3}$$

$$DAE \sim BAB \Rightarrow \frac{DE}{BC} = \frac{AE}{AC} \Rightarrow \frac{a}{12} = \frac{x}{x+1} \Rightarrow \frac{a}{12} = \frac{1}{3} \Rightarrow a = 4$$

$$\Rightarrow BC = 12 + \frac{a}{3} = 12 + \frac{4}{3} = \frac{38}{3}$$



$$AB^2 = AH \times AC = 14 \times 15 = 210 \Rightarrow AB = \sqrt{210}$$

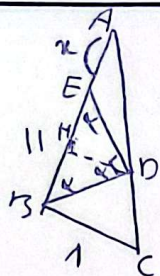
$$BC^2 = CH \times AC = 1 \times 15 = 15 \Rightarrow BC = \sqrt{15}$$

$$\frac{AB}{BC} = \frac{\sqrt{210}}{\sqrt{15}} = \frac{\sqrt{14 \times 15}}{\sqrt{15}} = \sqrt{14}$$

$$AFB \sim EFC \Rightarrow \frac{AF}{FC} = \frac{BF}{FE} \Rightarrow \frac{AF}{1} = \frac{4}{EF} \Rightarrow \frac{1+EF}{1} = \frac{4}{EF} \Rightarrow x^2 + 12 - 4 = 0$$

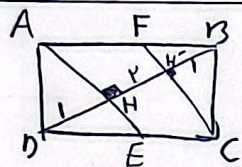
$$\Delta = 128 \Rightarrow x = \frac{-12 \pm \sqrt{128}}{2} = \frac{-12 \pm 8\sqrt{2}}{2} = -6 \pm 4\sqrt{2}$$

$$\Rightarrow EF = 4 \Rightarrow AF = AE + EF = 1 + 4 = 5$$



$$\Rightarrow EH = BH = DH = \frac{11}{2} = 5.5$$

$$AHD \sim ABC \Rightarrow \frac{AH}{AB} = \frac{DH}{BC} \Rightarrow \frac{5.5}{11+x} = \frac{5.5}{11} \Rightarrow x = 0$$



$$AH^2 = 1 \times 1 \Rightarrow AH = 1$$

$$AH^2 = (\sqrt{2})^2 + 1^2 = 3 \Rightarrow AD = \sqrt{3}$$

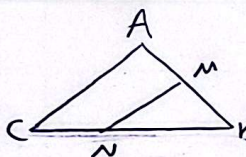
$$F^2 = 2^2 + AB^2 \Rightarrow AB = \sqrt{5}$$

$$DHE \sim AHB \Rightarrow \frac{AH}{HE} = \frac{AB}{DE} = \frac{BH}{DH} \Rightarrow \frac{1}{HE} = \frac{\sqrt{5}}{DE} = \frac{1}{DH} \Rightarrow HE = \frac{1}{\sqrt{5}}$$

$$S_{\triangle DHE} = \frac{1}{2} \times DE \times HE = \frac{1}{2} \times \sqrt{5} \times \frac{1}{\sqrt{5}} = \frac{1}{2}$$

$$ABO \rightarrow k^2 = \frac{AO}{BO} \rightarrow k = \sqrt{\frac{AO}{BO}}$$

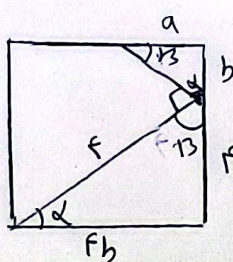
$$S_{\triangle ABO} = \frac{1}{2} \times AO \times BO \times \sin \theta = \frac{1}{2} \times \sqrt{AO} \times \sqrt{BO} \times \sin \theta = \frac{1}{2} \times \sqrt{AO \times BO} \times \sin \theta$$



$$\frac{AC}{MN} = \frac{AB}{MB} = \frac{CB}{NB} = \frac{a}{b} \Rightarrow \frac{AB}{AC} = \frac{MB}{MN}$$

$$S_{\triangle ABC} = \frac{1}{2} \times AB \times BC \times \sin B = \frac{1}{2} \times MB \times NB \times \sin B \times \frac{1}{b}$$

$$\Rightarrow AB \times \frac{1}{b} \times BN = BN \times MB \times \frac{1}{b} \Rightarrow \frac{AB}{MB} = \frac{a}{b} \Rightarrow \frac{AB - BM}{BM} = \frac{a}{b} \Rightarrow \frac{AM}{BM} = \frac{a}{b}$$



$$a^2 + b^2 = 1 \Rightarrow b^2 = \frac{14}{10}$$

$$f_a + b = f_b \Rightarrow f_a = \frac{1}{2}b \Rightarrow a = \frac{1}{2}b$$

$$S = 14 \times \frac{14}{10} = 1.96$$

$$\left. \begin{array}{l} AG = \frac{1}{2} GM = \frac{1}{4} AM \\ GM = \frac{1}{2} AG = \frac{1}{4} AM \end{array} \right\} \Rightarrow GN = \frac{1}{4} BD$$

$$FD = \frac{1}{4} GN \Rightarrow FD = \frac{1}{4} \times \frac{1}{4} \times BD \Rightarrow 4FD = BD \Rightarrow \frac{BD}{FD} = 4$$