

$$K = \frac{S'}{S} = \frac{DE}{BC} \rightarrow \frac{S_{ADE}}{S_{ABC}} = \left(\frac{DE}{BC}\right)^2$$

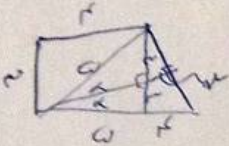
$$\frac{AC}{BC} = 1$$

$$\frac{S_{ADE}}{S_{ABC}} = \left(\frac{DE}{BC}\right)^2 = \left(\frac{1}{2}\right)^2 = \frac{1}{4}$$

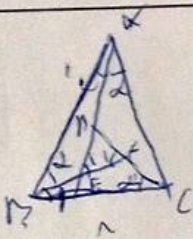
$$EH = \alpha H' = \alpha H'' \rightarrow EH = \alpha H' = \frac{1}{2} \alpha H' = \frac{1}{2} \alpha H'$$

$$\frac{S_{EBC}}{S_{ABC}} = \frac{BC}{BC} \times \frac{EH}{AH'} = \frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$$

$$S_{ADE} = S_{ABC} - (S_{ADE} + S_{EBC}) = \frac{3}{4} S_{ABC}$$



$$\frac{m}{n} = \frac{p}{q} \rightarrow m = p \checkmark$$

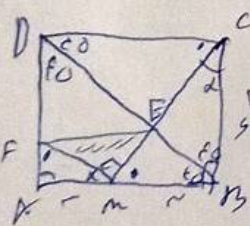


$$F_1 = \alpha + \beta_1 = \alpha \rightarrow F_1 = \alpha$$

$$E_1 = \alpha_1 + \alpha = \alpha \rightarrow E_1 = \alpha$$

$$\Delta ABC \sim \Delta DEF \Rightarrow \frac{BC}{DE} = \frac{AB}{EF}$$

$$\frac{1}{10} = \frac{\alpha \beta}{\alpha} \Rightarrow \alpha \beta = \frac{10}{10} = 1 \checkmark$$



$$\frac{m}{n} + \frac{p}{q} = \frac{r}{s} + \frac{t}{u} \rightarrow m = \sqrt{50}$$

$$\frac{m}{n} = \frac{p}{q} \rightarrow \frac{m}{\sqrt{50}} = \frac{9\sqrt{50}}{5} \Rightarrow \frac{\sqrt{50}}{n} = \frac{9\sqrt{50}}{5}$$

$$\frac{\sqrt{50} \times \sqrt{50}}{n} = \frac{10}{5} \Rightarrow \frac{50}{n} = 2 \Rightarrow n = 25$$

$$\frac{DC}{EM} = \frac{BC}{EM} \Rightarrow \frac{5}{2} = \frac{CE}{EM} = 4 \rightarrow CE = 2EM$$

$$CE + EM = CM = \sqrt{50} \rightarrow EM = \sqrt{50}$$

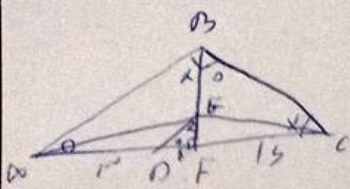
$$\Delta ADE \sim \Delta CD$$

$$E_1 \sim E_2$$

$$\Delta ADE \sim \Delta BEC \Rightarrow \frac{AD}{BE} = \frac{AE}{CE} = \frac{DE}{BE} \rightarrow \frac{1}{2} = \frac{AE}{CE} = \frac{DE}{BE}$$

$$\Delta E' = \alpha \alpha' + \alpha E' \Rightarrow \alpha E' = 1 + \alpha' \rightarrow 1 + \alpha' = 1 + 1$$

$$n^2 - (10n + 1) = 0 \rightarrow (n - 1)(n - 11) = 0 \Rightarrow n = 11 \checkmark$$

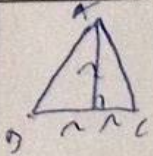


$$\frac{1}{2} = \frac{f}{FC} \rightarrow FC = 15$$

$$DF = f \times 15 \rightarrow DF = 1$$

$$BC = 15 + 1 \rightarrow BC = 16 \quad \checkmark$$

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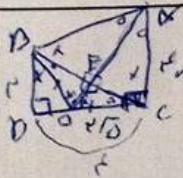


$$AM = \sqrt{a^2 + b^2} = \sqrt{17}$$

$$m_c = \frac{1}{2} \sqrt{a^2 + b^2} = \frac{1}{2} \sqrt{17} \rightarrow \frac{1}{2} \sqrt{17} = \frac{1}{2} \sqrt{17} \rightarrow \frac{1}{2} \sqrt{17} = \frac{1}{2} \sqrt{17}$$

$$\frac{1}{2} \sqrt{17} = \frac{1}{2} \sqrt{17} \quad \checkmark$$

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$$BO = OC \quad \left\{ \begin{array}{l} OE = OF \\ \angle BOE = \angle COF \end{array} \right. \rightarrow EC = EF = \frac{BC}{2} = \frac{\sqrt{5}}{2}$$

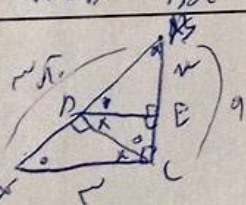
$$f + r = m_c \rightarrow 1 + f = \frac{\sqrt{5}}{2} \quad BC = \sqrt{5} = \sqrt{5} \quad \checkmark$$

$$\frac{\sqrt{5}}{2} = \frac{BC}{2} \rightarrow BC = \sqrt{5}$$

$$\frac{f\sqrt{5}}{f} = \frac{c}{r} \rightarrow c = r\sqrt{5} \quad S_{ABC} = S_{BAC} = S_{BOC} = \frac{1}{2} \sqrt{5}$$

$$\frac{r\sqrt{5}}{r\sqrt{5}} = \frac{OE}{r} \rightarrow OE = 1$$

$$\frac{1 \times \sqrt{5}}{2} = \frac{1}{2} \sqrt{5} \rightarrow S_{BOC} = \frac{1}{2} \sqrt{5}$$



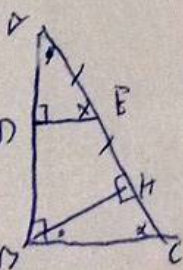
$$r + q = r + (1/4) \rightarrow K = \frac{1}{4} \sqrt{10}$$

$$KDC \sim KBC \rightarrow \frac{r}{K} = \frac{BC}{q} \rightarrow BC = \frac{q}{\sqrt{10}}$$

$$MEC \sim ABC \rightarrow \frac{q}{\sqrt{10}} = \frac{CE}{r} \rightarrow BE = \frac{q}{\sqrt{10}} \times \frac{1}{\sqrt{10}} = \frac{q}{10}$$

$$DE = BC - BE \rightarrow q - \frac{q}{10} = \frac{9q}{10} = 1 \quad \checkmark$$

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$$15 + r = AC \rightarrow AC = 16$$

$$KDC \sim KHC \rightarrow \frac{HC}{BC} = \frac{AC}{AC} \rightarrow \frac{16}{16} = \frac{HC}{16} \rightarrow \frac{16 \times r}{16} = HC$$

$$\frac{16 \times r}{16} = r \quad r = 16 - r \rightarrow r = 8$$

$$\frac{16 \times 8}{16} = 8 = AC$$

$$\frac{DE}{BC} = \frac{AE}{AC} \rightarrow \frac{16}{16} = \frac{DE}{16} \rightarrow \frac{16 \times 8}{16} = DE = 8 \quad \checkmark$$

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$$\text{في الخفض} \rightarrow BC = 2\sqrt{5}$$

$$BE = EC = \sqrt{5}$$

$$\triangle AEC \sim \triangle BCD \rightarrow \frac{2}{\sqrt{5}} = \frac{K}{AE} \rightarrow AE = 2\sqrt{5}$$

$$S_{ABE} = \frac{1}{2} \times \sqrt{5} \times 2\sqrt{5} = \textcircled{5}$$

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