

$$\frac{EF}{AF} = ?$$

$$BC \parallel AE \Rightarrow \begin{cases} \hat{C}_1 = \hat{A}_1 \\ \hat{B}_1 = \hat{E}_1 \end{cases} \Rightarrow \triangle BCF \sim \triangle AEF$$

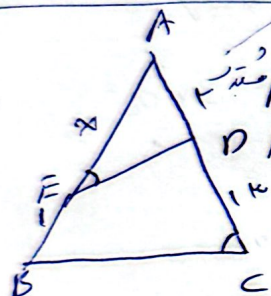
$$\Rightarrow \frac{BC}{AE} = \frac{CF}{AF} = \frac{BF}{EF}$$

$$AC = r\sqrt{2} = AF + FC$$

$$\frac{CF}{AF} = \frac{BC}{AE} = \frac{r}{r} = 1 \Rightarrow \frac{CF}{AF} = 1 \Rightarrow CF = AF$$

$$\frac{EF}{BF} = \frac{1}{r} \Rightarrow \frac{EF}{\frac{r}{\sqrt{2}}} = \frac{1}{r} \Rightarrow EF = \frac{\sqrt{2}}{2} r$$

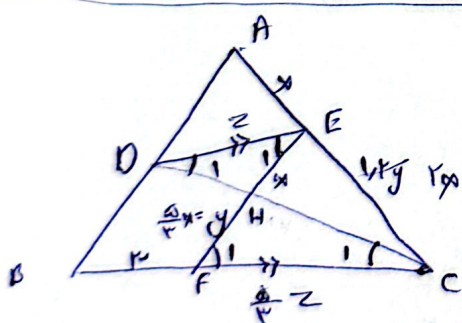
$$\frac{EF}{AF} = \frac{\frac{\sqrt{2}}{2} r}{\frac{r}{\sqrt{2}}} = \frac{\sqrt{2}}{2} \cdot \frac{\sqrt{2}}{1} = \frac{2}{2} = 1$$



$$\hat{A} = \hat{A} \Rightarrow \triangle ADE \sim \triangle ACB$$

$$\frac{y}{1+y} = \frac{a}{b} \Rightarrow y = \frac{a}{b} (1+y) \Rightarrow y + y - y = \frac{a}{b} \Rightarrow y = \frac{a}{b}$$

$$\frac{y}{b} = \frac{a}{b} \Rightarrow y = a$$



$$r_y = a$$

$$y = \frac{a}{b}$$

$$y = \frac{a}{b} \Rightarrow y = \frac{a}{b}$$

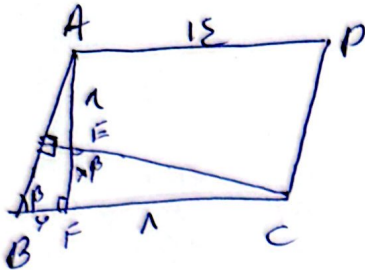
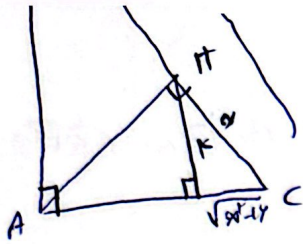
$$BC = r + \frac{a}{x} \cdot \frac{r}{x} = \frac{r}{x} + \frac{a}{x} = \frac{r+a}{x}$$

$$DE \parallel FC \Rightarrow \hat{E}_1 = \hat{F}_1 \Rightarrow \triangle DEH \sim \triangle CFH \Rightarrow \frac{DE}{CF} = \frac{DH}{FH} = \frac{DE}{FC}$$

$$DE \parallel BC \Rightarrow \frac{DE}{BC} = \frac{AD}{AB} = \frac{y}{c}$$

$$FC = \frac{a}{x}$$

$$\frac{a}{x} \cdot \frac{z}{r} = \frac{a}{x} \Rightarrow \frac{z}{r} = 1 \Rightarrow z = r$$



$$\hat{F} = \hat{B}F = 90^\circ \quad \hat{F}EC \quad \Rightarrow \triangle ABF \sim \triangle CEF$$

$$\rightarrow \frac{AF}{CF} = \frac{BF}{EF} \Rightarrow \frac{x+1}{1} = \frac{y}{14}$$

$$AF = x + AE = F + 1 = 14$$

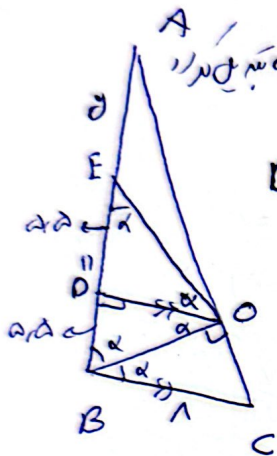
$$x^2 + 14x - 14 = 0$$

$$(x+14)(x-1) = 0$$

$$x = -14 \text{ or } x = 1$$

$$x = 1 \checkmark$$

(25)



$$BC \parallel OD \Rightarrow \angle C = \angle A \Rightarrow \angle A = 90^\circ$$

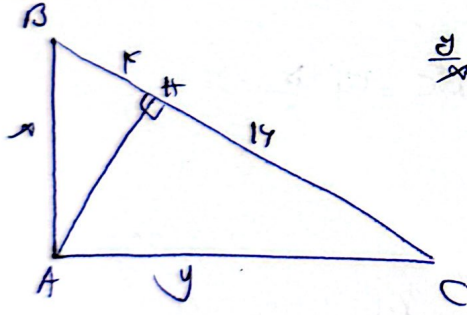
$$D \text{ on } BC = 2x \quad x^2 = d, d \times d, d \Rightarrow x = d, d \text{ relationship between } d \text{ and } x$$

$$\Rightarrow \frac{AO}{AB} = \frac{OD}{BC} \Rightarrow \frac{y+2x}{x} = \frac{14}{14}$$

$$\Rightarrow 14y = 14 + 14y \Rightarrow$$

$$dy = 24 \Rightarrow y = \frac{24}{2} = 12$$

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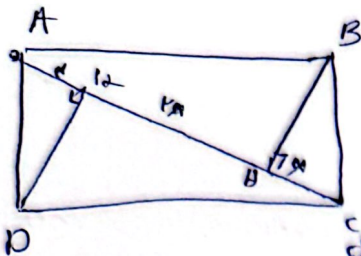
$$\frac{y}{x}$$

$$x^2 = BH \cdot BC \Rightarrow x = \sqrt{F \times 2} = \sqrt{14}$$

$$y^2 = CH \cdot BC \Rightarrow y = \sqrt{14 \times 2} = \sqrt{28}$$

$$\frac{y}{x} = \frac{\sqrt{28}}{\sqrt{14}} = \sqrt{\frac{28}{14}} = \sqrt{2} = \frac{2}{1}$$

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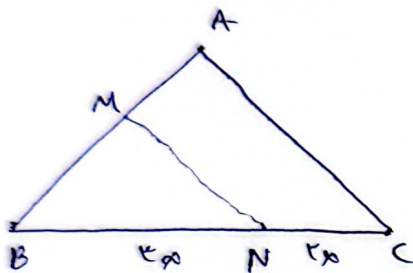
$$S_{BHC} = \frac{h \times BH}{1}$$

$$S_{ABC} = \frac{BH \times AC}{1}$$

$$S_{\text{total}} = S_{ABC} + S_{ADC} = BH \times AC$$

$$\frac{S_{\text{total}}}{S_{BHC}} = \frac{BH \times AC}{\frac{h \times BH}{1}} = \frac{BH \times AC}{h \times BH} = \frac{AC}{h} = 2$$

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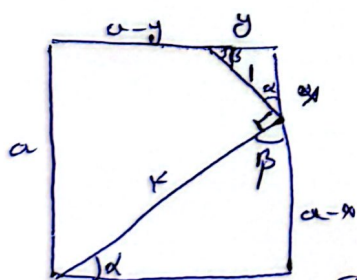
$$S_{ABC} = r S_{BMN} \quad \frac{BM}{AM} =$$

$$\frac{S_{ABC}}{S_{BMN}} = \frac{\frac{1}{2} \times AB \times BC \sin B}{\frac{1}{2} \times BM \times BN \sin B} = r$$

$$\frac{AB \times AC}{BM \times CN} = r \rightarrow \frac{AB}{BM} = \frac{r}{2}$$

$$\frac{AM}{AB - BM} = \frac{r}{2} \Rightarrow \frac{BM}{AM} = \frac{r}{2} = \frac{1}{2}$$

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$$\triangle DEC \sim \triangle EAB$$

$$\Rightarrow \frac{DC}{EB} = \frac{EC}{AB} = \frac{DE}{EA} = \frac{y}{a-x} = \frac{x}{a} = \frac{1}{2}$$

المثلثات
DEC و EAB
متشابهتان

$$14(a-x) = 14x^2 + 9x^2$$

$$x^2 = \frac{14}{20} \Rightarrow x = \frac{7}{10}$$

$$a = x + x = \frac{14}{10}$$

$$a^2 = \frac{14 \times 14}{20 \times 20} = 1.12$$

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