



$$ED = EA \quad \frac{EF}{AF} = ? \quad \left. \begin{array}{l} \angle 1 = \angle 2 \\ \angle 3 = \angle 4 \\ \angle 5 = \angle 6 \end{array} \right\} \Rightarrow \triangle ECF \cong \triangle EAF \Rightarrow \frac{EF}{AF} = \frac{FC}{AE} \Rightarrow FC = 2AF \quad (1)$$

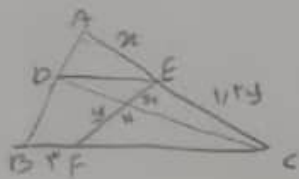
$$AC = 10\sqrt{2} \Rightarrow \sqrt{2}x = AF + EC \Rightarrow EAF = \sqrt{2}x \Rightarrow AF = \frac{\sqrt{2}}{2}x$$

$$EB = \sqrt{10^2 + 20^2} \Rightarrow BF + EF = \sqrt{10^2 + 20^2} \Rightarrow 2EF = \sqrt{10^2 + 20^2} \Rightarrow EF = \frac{\sqrt{10^2 + 20^2}}{2} \Rightarrow \frac{EF}{AF} = \frac{\frac{\sqrt{10^2 + 20^2}}{2}}{\frac{\sqrt{2}}{2}x} = \frac{\sqrt{10^2 + 20^2}}{\sqrt{2}x}$$

$$\left. \begin{array}{l} A = A \\ C = E \end{array} \right\} \Rightarrow \triangle ADE \cong \triangle ABC \Rightarrow \frac{y}{2+1} = \frac{x}{10} \Rightarrow 2x + x - 10 = 2x + x - 10 = 0$$



$$(2-0)(2+y) \Rightarrow 2 = \frac{-y}{0.00} \Rightarrow 2 = 0$$



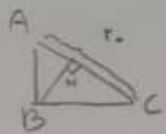
$$y = 0.2x \Rightarrow y = \frac{0}{2}x \Rightarrow \frac{y}{x} = \frac{0}{2}$$

$$\triangle DEH \sim \triangle FCH \Rightarrow \frac{DE}{FC} = \frac{y}{x} \Rightarrow \frac{DE}{FC} = \frac{y}{x}$$

$$\frac{AF}{AC} = \frac{DE}{BC} \Rightarrow \frac{x}{2+y} = \frac{DE}{FC+x} \Rightarrow \frac{x}{2+(1/2)x} = \frac{x}{2} = \frac{DE}{FC+x} \Rightarrow$$

$$FC+x = 2DE \Rightarrow FC+x = \frac{1}{2}FC \Rightarrow \frac{1}{2}FC = x \Rightarrow FC = 2x$$

$$BC = BF + FC \Rightarrow BC = x + 2x = 3x$$



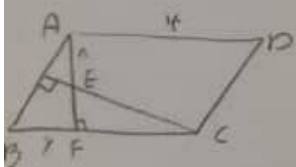
$$AH = y \Rightarrow HC = 14$$

$$BH^2 = AH \times CH \Rightarrow BH^2 = y \times 14 = 49 \Rightarrow BH = 7$$

$$BH^2 + HC^2 = BC^2 \Rightarrow \sqrt{49 + 196} = BC \Rightarrow BC = \sqrt{245} = 1\sqrt{10}$$

$$BH \times AC = AB \times BC \Rightarrow 7 \times 10 = 1\sqrt{10} \times AB \Rightarrow AB = \frac{70}{1\sqrt{10}} = 7\sqrt{10}$$

$$\frac{7\sqrt{10}}{1\sqrt{10}} = \frac{1}{1} \Rightarrow \frac{7\sqrt{10}}{1\sqrt{10}} = 7$$



$$AF = ?$$

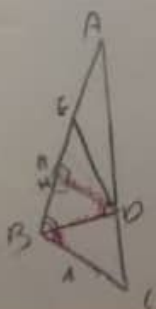
$$\triangle ABF \cong \triangle FCE \Rightarrow \frac{BF}{FE} = \frac{AF}{FC} \Rightarrow \frac{y}{FE} = \frac{1+FE}{1} \Rightarrow FE^2 + 1FE = 1$$

$$1F - y = 1$$

$$FE^2 + 1FE - 1 = 0$$

$$AF = 1 + 1 = 2$$

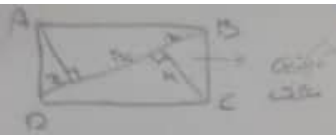
$$(FE - 1)(FE + 1) = 0 \Rightarrow FE = 1$$



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

$$\left. \begin{array}{l} \angle ABC = 90^\circ \\ \angle AHC = 90^\circ \end{array} \right\} \Rightarrow \angle B = 90^\circ$$

$$\frac{11+11}{11+11} = \frac{11}{11} \Rightarrow 1 = 1$$



$$\frac{dS}{dx} = \frac{h \cdot x}{x} = h \Rightarrow \frac{dS}{dx} = \frac{h \cdot x}{x} = h$$

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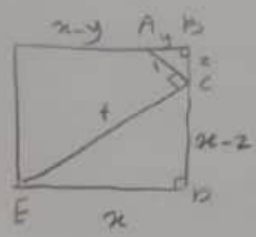


$$\frac{AB}{BM} = \frac{AC}{CM} \Rightarrow \frac{BM}{AM} = \frac{h'}{h} = \frac{a}{b}$$

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$$\frac{\frac{1}{2} BC (h+h')}{\frac{1}{2} BN (h')} = r \Rightarrow 4(h+h') = rh' \Rightarrow \frac{h'}{h} = \frac{a}{b}$$

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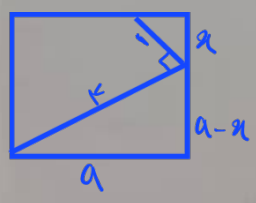
$$\frac{AB}{BE} = \frac{AC}{CE} \Rightarrow \frac{1}{r} = \frac{y}{x-2} = \frac{z}{x} \Rightarrow x-2 = z \Rightarrow \frac{y}{x-2} = \frac{1}{r} \Rightarrow y = \frac{r}{r-1} z$$

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$$z^2 + y^2 = 1 \Rightarrow z^2 + \frac{r^2}{(r-1)^2} z^2 = 1 \Rightarrow z^2 = \frac{1}{1 + \frac{r^2}{(r-1)^2}} \Rightarrow z = \frac{r-1}{r}$$

$$(x-2)^2 + x^2 = 1 \Rightarrow x^2 - \frac{4}{r} x + \frac{14}{r^2} + x^2 = 1 \Rightarrow$$

1/a



$$r^2 = (a-x)^2 + a^2 \Rightarrow 14 = 9a^2 + 14a^2 \Rightarrow a = \frac{14}{9} \Rightarrow S = a^2 = \frac{196}{81}$$

$$x^2 - \frac{4}{r} x + \frac{14}{r^2} = 1 \Rightarrow x = \frac{2 \pm \sqrt{4 - 4(1 - \frac{14}{r^2})}}{2} = \frac{2 \pm \sqrt{4(1 - \frac{14}{r^2})}}{2} = 2 \pm \sqrt{1 - \frac{14}{r^2}}$$



$$\frac{BD}{FD} = \frac{rGD}{\frac{1}{r}GD} = \frac{r}{\frac{1}{r}} = r^2$$

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