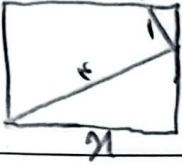


	$AC = 3\sqrt{2}x \rightarrow y = \frac{3\sqrt{2}}{2}x$ $BC \parallel AE \rightarrow \triangle BFE \sim \triangle AFE$ $\frac{EF}{BF} = \frac{AE}{BC} = \frac{AF}{FC} = \frac{1}{2}$ $BE = \sqrt{1^2 + x^2} = \sqrt{1+x^2}$ $1+x^2 = 10 \rightarrow x = \frac{\sqrt{9}}{2} = \frac{3}{2}$ $\frac{EF}{AF} = \frac{\frac{3}{2}}{\frac{3\sqrt{2}}{2}x} = \frac{\sqrt{2}}{2}$	۱
$\frac{10}{1+x} = \frac{x}{2} \rightarrow x^2 + x - 2 = 0 \rightarrow (x+2)(x-1) = 0$ $\Rightarrow x = 1$ ✓ $x = -2$ ✗		۲
$\frac{y}{x} = \frac{a}{r}$ $1, 2y = 1x$ $\frac{2x}{x} = \frac{BC}{DE}$ $\frac{FC}{DE} = \frac{y}{x} = \frac{a}{r} \rightarrow \frac{BC}{DE} = \frac{r+FC}{DE} \rightarrow r = \frac{r}{DE} + \frac{a}{r}$ $\frac{r}{r} = \frac{r}{DE} \rightarrow DE = \frac{a}{r} \rightarrow BC = r \times \frac{a}{r} = \frac{24}{r}$		۳
	$BC^2 = 17^2 \rightarrow BC = 17\sqrt{2}$ $AB^2 = 14^2 \rightarrow AB = 14\sqrt{2}$ $\frac{AB}{BC} = \frac{14\sqrt{2}}{17\sqrt{2}} = \frac{14}{17}$	۴
$\frac{x}{17} = \frac{4}{17+x} \rightarrow x^2 + 17x - 68 = 0 \rightarrow (x+17)(x-4) = 0$ $\Rightarrow x = 4$ ✓ $x = -17$ ✗	$AF = 17 + 4 = 21$	۵

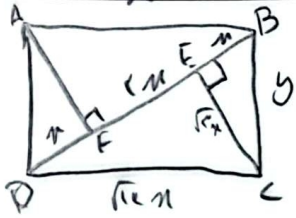
سوال 9

$$\frac{r}{1} = \frac{n}{\frac{n}{r}} \quad \frac{r}{1} = \frac{\frac{r}{r} n}{\frac{r}{r} n} \quad \left(\frac{r}{r} n \right)^2 + n^2 = r^2$$

$$\rightarrow \frac{r}{14} n^2 + n^2 = 14 \rightarrow \frac{r+14}{14} n^2 = 14 \rightarrow n^2 = \frac{14 \times 14}{r+14} = 10.14$$



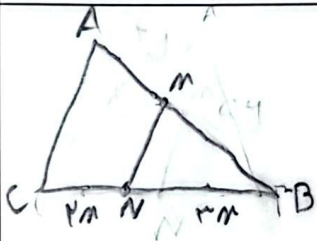
9



$$\frac{y}{rn} = \frac{n}{y} \rightarrow y = rn$$

$$\frac{S_{ABC}}{S_{BCE}} = \frac{\frac{1}{2} n \times r}{\frac{1}{2} n \times \sqrt{r^2 - n^2}} = 1$$

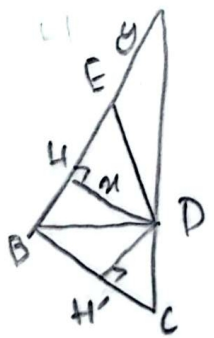
Y



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

$$\frac{AB}{BM} = \frac{r}{w} \rightarrow \frac{AB - BM}{BM} = \frac{r}{w} \rightarrow \frac{BM}{AM} = \frac{w}{r}$$

A



HD = DH' = 1

$$n^2 = n(11-n) \rightarrow rn^2 = 11n \rightarrow n = 11 \times r$$

$$\frac{y + w}{11 + y} = \frac{w}{11} \rightarrow 11y + 121 = yw + 11w$$

$$\rightarrow 11y = 11w - 121 \rightarrow y = 11 - 11$$

سوال 4

4

$$FD = n \rightarrow GF = rn \rightarrow GD = rn \quad BG = 4m$$

$$\frac{BD}{FD} = \frac{9m}{n} = 9$$

10