

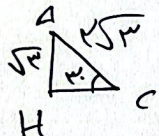
نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره ۲ و کلاس دهم دبیرستان B

الف)
$$\left(\frac{\sqrt{2}}{2} + \frac{-\sqrt{3}}{2} \right) \left(\frac{\sqrt{2}}{2} - \frac{(-\sqrt{3})}{2} \right) = \left(\frac{\sqrt{2} - \sqrt{3}}{2} \right) \left(\frac{\sqrt{2} + \sqrt{3}}{2} \right)$$

ب)
$$\frac{1 + 3(\sqrt{3})^2}{4\left(\frac{3}{4}\right) + 4\left(\frac{1}{4}\right)} = \frac{1 + 9}{3 + 1} = \frac{10}{4} = \frac{5}{2} = \frac{2}{5}$$

الف)

$$AH = \frac{\sqrt{2}}{2} \times \sqrt{6} = \sqrt{3}$$



$$\rightarrow HC = \frac{\sqrt{3}}{2} \times \sqrt{6} = 3$$

ب)
$$\tan \theta = \frac{AH}{HC} = \frac{\sqrt{3}}{3} \Rightarrow \theta = 30^\circ$$

$$\sin \theta \times 3\sqrt{6} = 3\sqrt{3}$$

$$\sin \theta = \frac{\sqrt{2}}{2} \rightarrow \theta = 45^\circ$$

الف)

$$\tan \theta = \frac{BD}{BC} \Rightarrow BD = 20$$

$$x = 100 - 20 = 80$$

$$\rightarrow BD = 20$$

$$\tan \theta = \frac{BD}{BC} \Rightarrow BC = 100$$

ب)
$$\sin \alpha = \frac{BD}{BC} = \frac{1}{\sqrt{2}} \Rightarrow \alpha = 45^\circ$$

$$\tan \theta = \frac{BC}{AD} \Rightarrow BC = 2\sqrt{3}$$

$$BC^2 = (2\sqrt{3})^2 - 1^2 = 12 - 1 = 11$$

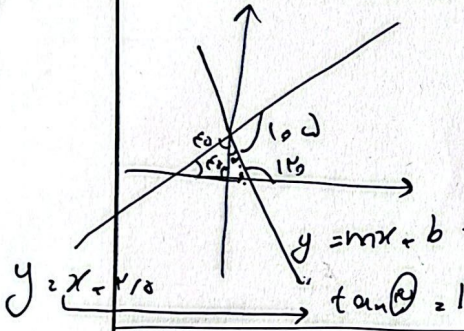
$$BC = \sqrt{11}$$

$$\frac{AB}{\sin C} = \frac{AC}{\sin B} \rightarrow \frac{AB}{AC} = \frac{\sin C}{\sin B} = \frac{\sin 120^\circ}{\sin 30^\circ} = \frac{\frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2}}{\frac{1}{2}}$$

$$= \frac{\sqrt{3} + \sqrt{3}}{1} = 2\sqrt{3}$$

$$\frac{\sin ABE}{\sin BCD} = \frac{\frac{1}{2} \times 2 \times 2 \times \sin \beta_1}{\frac{1}{2} \times 3 \times 3 \times \sin \beta_2} = \frac{2}{9}$$

$$\rightarrow \beta_1 = \beta_2$$

الف) $S = ab \sin \alpha$ $r \times r \times \frac{\sqrt{r}}{r} = r\sqrt{r}$	ب) $S = \frac{1}{r} ab \sin \alpha$ $\frac{1}{r} \times r \times r \times \frac{\sqrt{r}}{r} = r\sqrt{r}$	6
$y = ax + b$ $\begin{cases} r = wa + b \\ r = +a + b \end{cases}$ $\rightarrow r = ra$ $\alpha = \frac{1}{r} = \tan \theta$	$r \sin \theta = r \cos \theta$ $\sin^2 \theta + \cos^2 \theta = 1$ $\sin^2 \theta + r^2 \sin^2 \theta = 1$ $\sin^2 \theta = \frac{1}{r^2}$ $\cos^2 \theta = 1 - \frac{1}{r^2} = \frac{r^2 - 1}{r^2} \rightarrow \cos \theta = \frac{r}{r^2 - 1} = \frac{r\sqrt{r}}{r^2 - 1}$	7
 $y = mx + b$ $\tan \theta = 1$ $y = x + r/2$	$m = \tan \theta = -\sqrt{r}$ $b = y = r/2$ $b = y = r/2$ $mb = \frac{-\sqrt{r} \times r}{r} = \frac{-r\sqrt{r}}{r}$	8
$-\cos(\frac{2\pi}{5}) + \cos(\frac{2\pi}{5}) + \tan(\frac{2\pi}{5})$ $\tan(120)^\circ = \frac{\frac{1}{r}}{\frac{-\sqrt{r}}{r}} = \frac{-\sqrt{r}}{r}$		9
$\frac{-\cos x + (\cos x)}{-\cos x - \cos x} = \frac{-r \cos x}{-r \cos x} = 1$		10