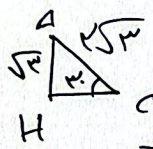


نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره ۲ و کلاس دهم دبیرستان B

الف) $\left(\frac{\sqrt{2}}{2} + \frac{-\sqrt{3}}{2}\right) \left(\frac{\sqrt{2}}{2} - \frac{-\sqrt{3}}{2}\right) = \left(\frac{\sqrt{2}-\sqrt{3}}{2}\right) \left(\frac{\sqrt{2}+\sqrt{3}}{2}\right)$
 $\frac{2-3}{4} = \frac{-1}{4}$ ✓

ب) $\frac{1 + 3\left(\frac{\sqrt{3}}{2}\right)^2}{4\left(\frac{3}{4}\right) + 4\left(\frac{1}{4}\right)} = \frac{1 + \frac{9}{4}}{3 + 1} = \frac{\frac{13}{4}}{4} = \frac{13}{16}$
 $\frac{1}{4} = \frac{1}{4}$ ✓

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


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

ب) $\tan \theta = \frac{AH}{HC} = \frac{\sqrt{3}}{\sqrt{3}} = 1$
 $\sin \theta = \frac{1}{\sqrt{2}} \rightarrow \theta = 45^\circ$ ✓

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

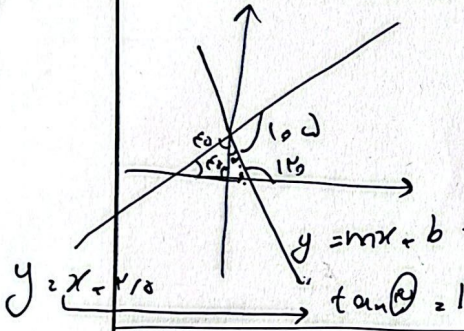
الف) $\tan \theta = \frac{BD}{BC}$
 $\rightarrow BD = 20$
 $\tan \theta = \frac{20\sqrt{2}}{BC} \rightarrow BC = 20\sqrt{2}$ ✓

ب) $\sin \alpha = \frac{BD}{BC} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$
 $\tan \theta = \frac{BC}{AD} \rightarrow BC = \sqrt{2}$
 $BC^2 = (\sqrt{2})^2 + 1^2 = 2 + 1 = 3$
 $BC = \sqrt{3}$ ✓

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

$\frac{AB}{BC} = \frac{\sin \beta_2}{\sin \beta_1} = \frac{\frac{1}{2}}{\frac{1}{2}} = 1$
 $\beta_1 = \beta_2$ ✓

$\rightarrow \beta_1 = \beta_2$ ✓

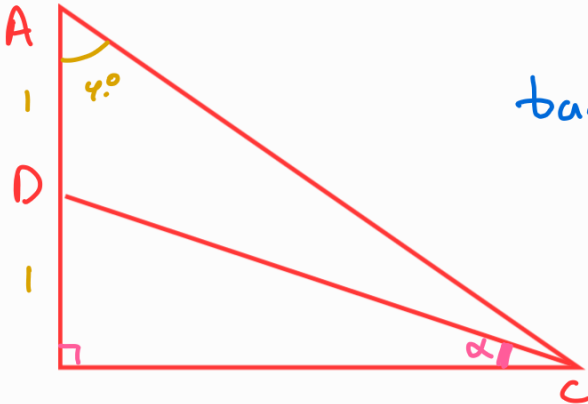
الف) $S = ab \sin \alpha$ $r \times r \times \frac{\sqrt{r}}{r} = \sqrt{r}$	ب) $S = \frac{1}{r} ab \sin \alpha$ $\frac{1}{r} \times r \times r \times \frac{\sqrt{r}}{r} = r \sqrt{r}$	6
$y = ax + b$ $\begin{cases} r = wa + b \\ r = +a + b \end{cases}$ $\rightarrow r = ra$ $\alpha = \frac{1}{r} = \tan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

1

$$\text{جواب)} (\sin 135^\circ + \sin 45^\circ) (\cos 135^\circ - \cos 45^\circ)$$

$$\left(\frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2}\right) \left(\frac{\sqrt{2}}{2} - \left(-\frac{\sqrt{2}}{2}\right)\right) = \left(\frac{\sqrt{2}}{2}\right)^2 - \left(\frac{\sqrt{2}}{2}\right)^2 = \frac{1}{2} - \frac{2}{2} = \boxed{-\frac{1}{2}}$$

$$\hookrightarrow \frac{1 + \tan^2 45^\circ}{\frac{1}{\cos^2 45^\circ} + \frac{1}{\sin^2 45^\circ}} = \frac{1 + 1 \left(\frac{\sqrt{2}}{2}\right)^2}{\frac{1}{\left(\frac{\sqrt{2}}{2}\right)^2} + \frac{1}{\left(-\frac{\sqrt{2}}{2}\right)^2}} = \frac{1 + 1}{2 + 1} = \boxed{\frac{1}{3}}$$



3- الف

$$\tan 40^\circ = \frac{BC}{AB} \rightarrow BC = 2\sqrt{3}$$

$$DC^2 = (2\sqrt{3})^2 + (1)^2 = 13 \rightarrow DC = \sqrt{13}$$

$$\boxed{\sin \alpha = \frac{1}{\sqrt{13}}}$$

9

$$\underbrace{(\pi + \pi)}_{-\cos x} + \underbrace{\sin\left(\frac{\pi}{4} - x\right)}_{\cos x} - \tan\left(\frac{\pi}{4} + x\right)$$

$$-\cos x + \cos x + \cot x$$

$$f(x) = \cot x \rightarrow f\left(\frac{\omega\pi}{4}\right) = \cot\left(\frac{\omega\pi}{4}\right) = -\sqrt{3}$$

$$\sin\left(\frac{13\pi}{4} + x\right) = \cos x$$

$$\cos(4\pi + x) = -\cos x$$

$$\cos\left(\frac{13\pi}{4} - x\right) = -\sin x$$

$$\sin(4\pi - x) = -\sin x$$

عبارت سوال =

$$\frac{\cos x - \sin x}{-\cos x + \sin x} = -1$$

10