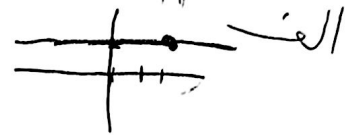


الف) $y^3 - x = 2x^2 \Rightarrow y_1^3 - x_1 = 2x_1^2$ و $y_2^3 - x_2 = 2x_2^2 \Rightarrow x_1 = x_2 = y_1 = y_2 = x$ ✓
 ب) $|y| + x^2 = x + 3 \xrightarrow{x=0} |y| = 3 \Rightarrow y = -3$ و $3x$
 ج) $\sqrt{x-4} + |y-2| = 0 \xrightarrow{x=4} |y-2| = 0 \Rightarrow y = 2$ ✓
 د) $x = \cos y \Rightarrow y = \cos x$ و $x = \cos y$ ✗

$y = 1$,

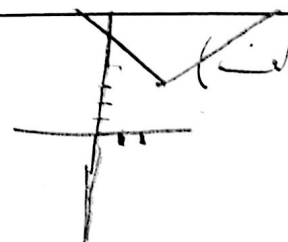
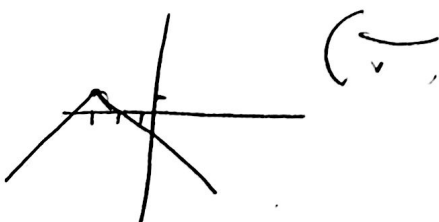
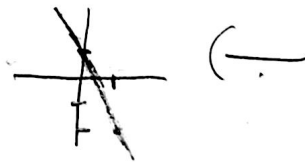
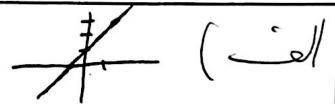
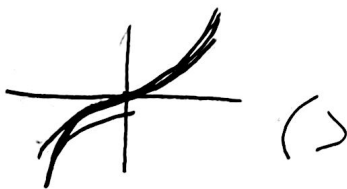
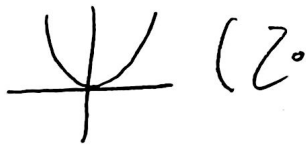


$y = 2x$,



$y = x \Rightarrow ax + b = x \rightarrow x = 1, a + b = 1, x = 2, 2a + b = 2$ (الف)
 $\Rightarrow a = 1, b = 0$ و $a + 2b = 1$

$\frac{-a}{2b} = x \Rightarrow \frac{-a}{2} = 2, a = -4 \Rightarrow y = 2 - 1 + b = 0 \Rightarrow b = 0$
 $a + 2b = 0$ (ب)

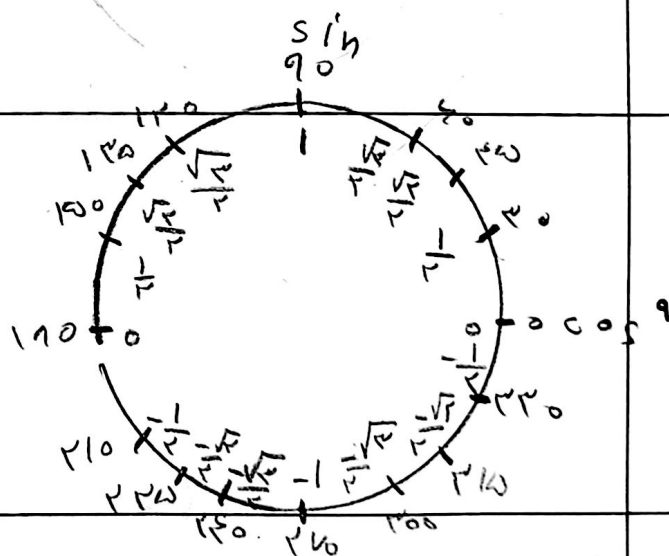
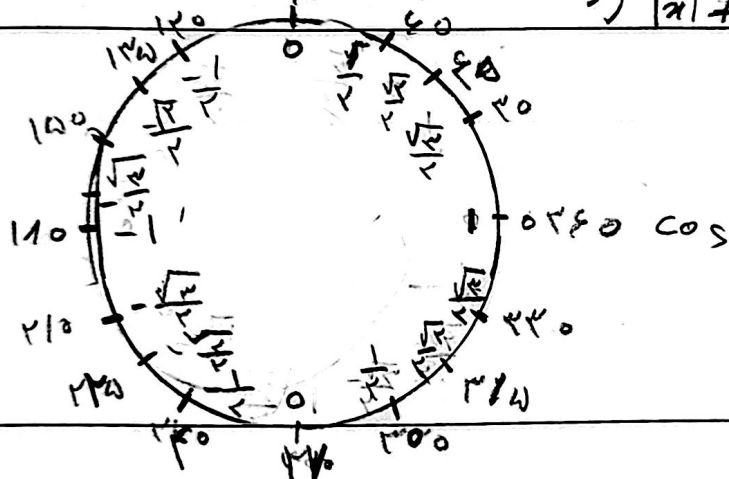


الف) $x^2 - 15x + 4 = 0 \Rightarrow x = \frac{15 \pm \sqrt{15^2 - 4}}{2} = 0,4, 14,6 \Rightarrow D = \mathbb{R} - \{0,4\}$

ج) $x^2 + x + 4 = 0 \Rightarrow 1 \pm \sqrt{1-16} = 0 \Rightarrow D = \mathbb{R}$
 $\Rightarrow x(x-4) = 0 \Rightarrow x = 0, 4 \Rightarrow D = \mathbb{R} - \{0, 4\}$

الف) $19 = 2 \leq x \leq 6$
 $6 - x \geq 0 \Rightarrow x \leq 6$, $x - 2 \geq 0 \Rightarrow x \geq 2$
 $\therefore D = [2, 6]$

ج) $x - 2 \geq 0 \Rightarrow x \geq 2$, $x - 4 \neq 0 \Rightarrow x \neq 4 \Rightarrow D = [2, \infty) - \{4\}$
 $\Rightarrow |x| + x^2 \neq 0 \quad |x| \neq -x^2 \Rightarrow D = \mathbb{R} - \{0\}$



$\frac{\pi}{6}, \frac{5\pi}{6} \leftarrow \cos \frac{\pi}{6} = \frac{\sqrt{3}}{2} = \frac{1}{2}$

$\frac{7\pi}{6}, \frac{11\pi}{6} \leftarrow \frac{11\pi}{6} = 330^\circ = \frac{1}{2}$