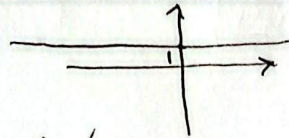


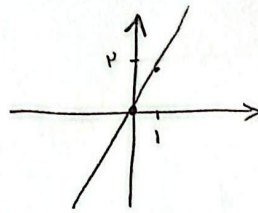
الف) $y_1^3 - x_1 = 2x_1^2 \xrightarrow{x_1=x_2} y_1^3 = y_2^3 \rightarrow y_1 = y_2$ تابع است
 $y_2^3 - x_2 = 2x_2^2$

ب) $|y| + x^2 = x + 3 \xrightarrow{x=0} |y| = 3 \rightarrow y = \pm 3$ تابع نیست
 فقط یک نقطه تابع است $\rightarrow x=4 \quad y=2$

ج) $\sqrt{x-4} + |y-2| = 0 \quad x=4 \quad y=2$ تابع نیست
 $\rightarrow x = \cos y \xrightarrow{y=0} \cos y = 0 \rightarrow (0, 2\pi, 4\pi, \dots)$



الف) $y = k$



ب) $y = ax + b$

$y = 2x + b$

$y = 2 + 0$

$a + 2b \rightarrow 4 + 0 = 4$

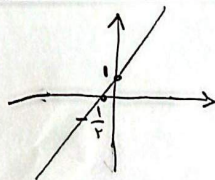
الف) $y = x$ $y = ax + b$

$\frac{-b}{2a} = \frac{-a}{2} = 2 \quad a = -4$
 $4 - 1 + b = 1 \quad b = 0$

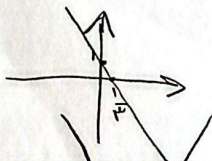
$a + 2b \rightarrow -4 + 0 = -4$

ب)

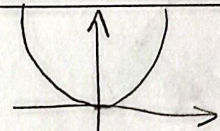
الف) $y = 2x + 1$
 $0 = 2x + 1 \rightarrow x = -\frac{1}{2}$



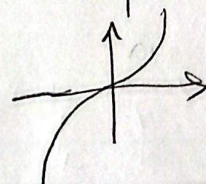
ب) $y = -3x + 1$



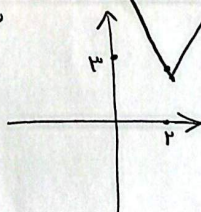
ج) $y = x^2$



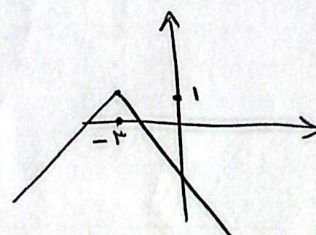
د) $y = x^3$



الف) $y = |x - 2| + 3$



ب) $y = -|x + 3| + 1$



الف) $x^2 - 4x \neq 0 \quad D_f = \mathbb{R} - \{0, 4\}$
 $x(x-4) \neq 0 \rightarrow x \neq 0 \quad x \neq 4$

ج) $x^2 + x + 4 \neq 0 \quad D_f = \mathbb{R}$
 $\Delta = 1 - 16 \rightarrow \text{منفي}$

ب) $x^2 - 4x + 4 \neq 0 \quad D_f = \mathbb{R}$
 $\Delta = 16 - 16 \rightarrow \text{منفي}$

د) $x^2 - 4x^2 \neq 0 \quad D_f = \mathbb{R} - \{0, 2, -2\}$
 $x^2(x^2 - 4) \neq 0$
 $x^2(x-2)(x+2) \neq 0$

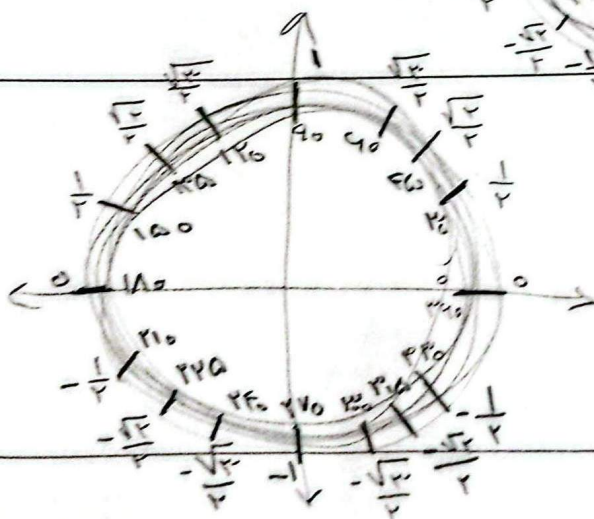
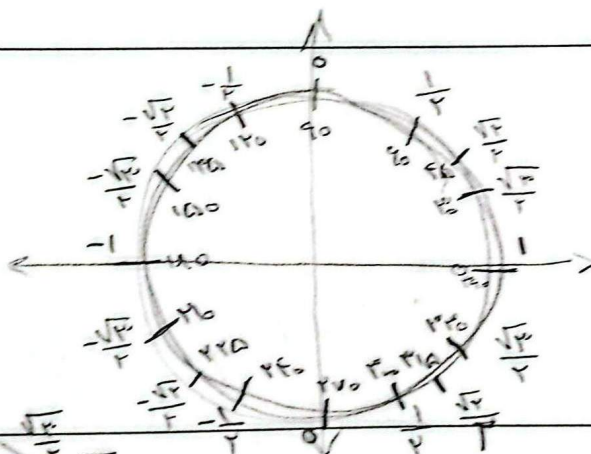
الف) $4-x > 0 \quad x-2 > 0$
 $4 > x \quad x > 2$
 $2 < x < 4 \quad D_f = [2, 4]$

ج) $x-2 \neq 0 \quad x-2 > 0$
 $x \neq 2 \quad x > 2$
 $D_f = [2, \infty) \cup (2, \infty)$

ب) $x^2 + 1 \neq 0 \quad D_f = \mathbb{R}$
 $x^2 \neq -1 \quad x$

د) $|x| + x^2 \neq 0 \quad D_f = \mathbb{R} - \{0\}$
 $\frac{+}{-} \sqrt{\frac{+}{-} x}$

Cos →



الف) $\frac{\pi}{4} \rightarrow 45^\circ \rightarrow \cos 45^\circ \rightarrow \frac{\sqrt{2}}{2} \rightarrow \frac{1}{\sqrt{2}} \rightarrow \frac{\sqrt{2}}{2} \rightarrow \boxed{\frac{\pi}{4}, \frac{\omega\pi}{4}}$

ب) $\frac{11\pi}{4} \rightarrow 315^\circ \rightarrow \cos 315^\circ \rightarrow \frac{\sqrt{2}}{2} \rightarrow \frac{1}{\sqrt{2}} \rightarrow \frac{\sqrt{2}}{2} \rightarrow \boxed{\frac{5\pi}{4}, \frac{\omega\pi}{4}}$