

الف) $x^2 - 4x = 0 \quad x(x-4) = 0 \quad x \in \mathbb{R} \quad D_f = \mathbb{R} - \{0, 4\} = (-\infty, 0) \cup (0, 4) \cup (4, +\infty)$

ب) $x^2 - \sqrt{x} + 14 = 0 \quad \Delta = -10 \quad D_f = \mathbb{R}$

ج) $x^2 + x + 4 = 0 \quad \Delta = -15 \quad D_f = \mathbb{R}$

د) $x^2 - x^2 = -1x^2 \rightarrow x^2 = 0 \quad x = 0 \quad D_f = \mathbb{R} - \{0\} = (-\infty, 0) \cup (0, +\infty)$

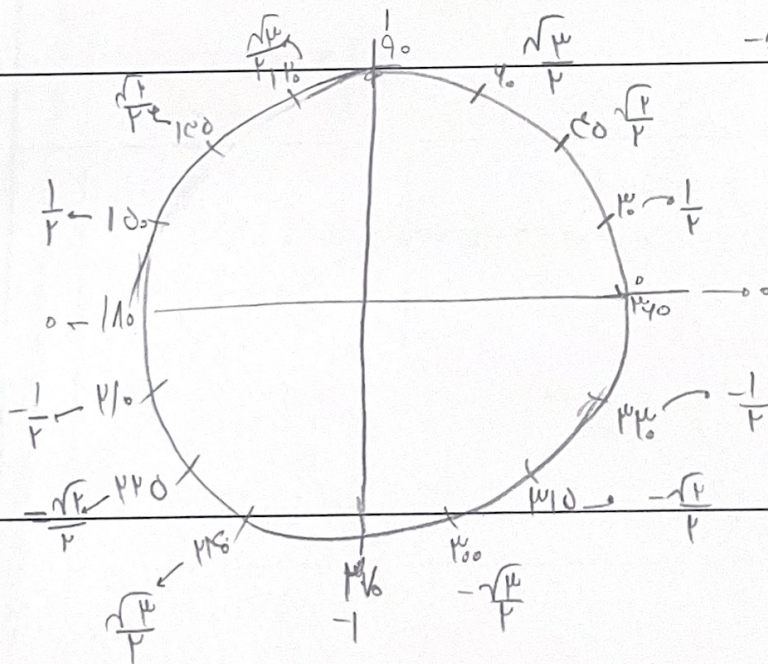
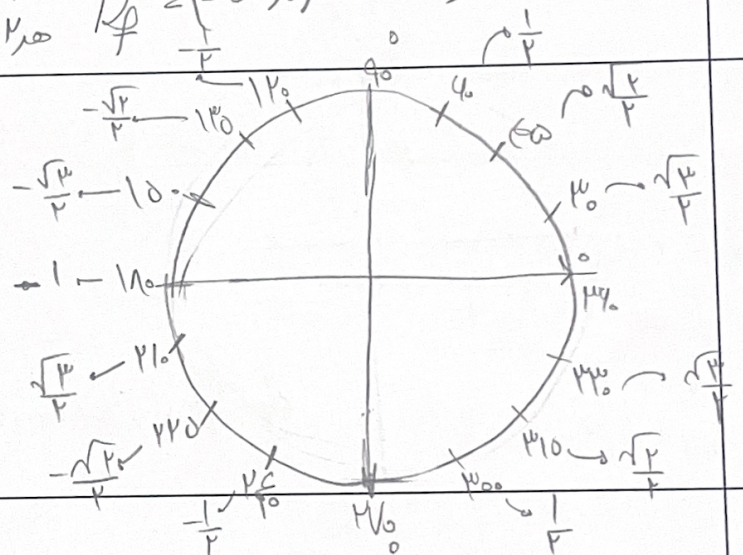
الف) $4 - x \geq 0 \rightarrow x \leq 4, x - 4 \geq 0 \rightarrow x \geq 4 \quad D_f = [4, 4]$

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

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

د) $|x| + x^2 \neq 0 \quad x = 0 \quad D_f = (-\infty, 0) \cup (0, +\infty)$

cos →



← sin

✓ (C) ✓

$\frac{\pi}{2} = 1.0 \rightarrow \cos 1.0 = -\frac{1}{\pi}$

$-\cos 1.0 \rightarrow \frac{1}{\pi} \rightarrow \sin 1.0 = +\frac{1}{\pi}$

$\frac{\pi}{4} = \frac{1}{4} \rightarrow -\cos \frac{\pi}{4} = \sin \frac{\pi}{4}$

$-\cos \frac{\pi}{4} = \sin(\frac{\pi}{4} - \frac{\pi}{4}) = \sin(-\frac{\pi}{4})$

$= -\frac{\pi}{4} + \frac{\pi}{4} = \frac{\pi}{4} = 4 \sin \frac{\pi}{4}$

(C) ✓

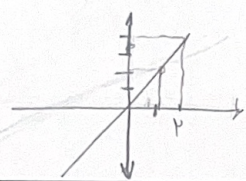
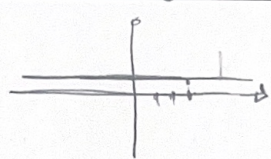
باید بررسی به ازای $y=0$ و $y=1$ ۱۹، ۷۵

الف) $y^3 - x = 2x^2 \rightarrow y = \sqrt{2x^2 + x}$

ب) $|y| + x^2 = x + 3 \rightarrow |y| = x + 3 - x^2 = 4 - (x^2 - x + 3) = 4 - (x - \frac{1}{2})^2 + \frac{1}{4} = \frac{15}{4} - (x - \frac{1}{2})^2$ ۱۹، ۷۵

ج) $\sqrt{x-4} + |y-2| = 0 \rightarrow \sqrt{x-4} = 0, |y-2| = 0 \Rightarrow x=4, y=2$

د) $x = \cos y \rightarrow x=1, y=0, 2\pi, 4\pi, \dots$



۲ ✓

$y = ax + b \rightarrow y = 2x$

الف) تابع ثابت زیرا از نقطه ۳

ب) تابع خطی زیرا از نقطه ۱ با شیب ۲ واحد

$x_{\text{اس}} = \frac{-a}{2} = 2 \rightarrow a = -4$

$x=2, y=1$

$1 = 2^2 + (-4)(2) + b$

$1 = 4 - 8 + b \rightarrow b = 5$

$a+2b = -4 + 2(5) = 6$

۳ ✓

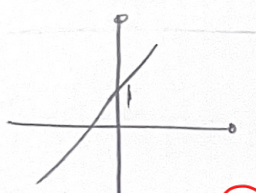
الف) $y = ax + b$

$y=x, x=1$

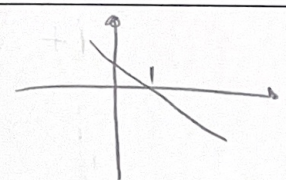
$b=0$

$a+2b = 1 + 2(0) = 1$

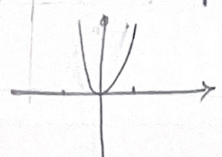
الف) $y = 2x + 1$



$y = 3x + 1$

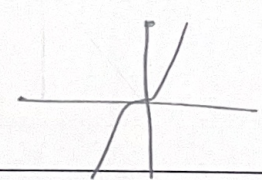


$y = x^2$



۴ ✓

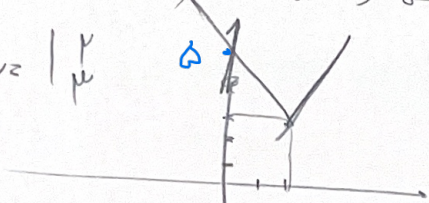
$y = -x^2$



الف)

$x-2, 2$ واحد به راست $+3$ واحد به بالا

$\frac{1}{2} = \frac{2}{x}$



عرض از مبدأ توجه کن

۵ ✓

$\frac{1}{2} = \frac{2}{x} \rightarrow x=4$ واحد به راست $+1$ واحد به بالا

