

الف) $y^2 - x = 2x^2 \Rightarrow y^2 = 2x^2 + x$
 $\Rightarrow y = \sqrt{2x^2 + x}$
 تابع است.

ج) $\sqrt{x-4} + |y-2| = 0$

$\Rightarrow \sqrt{x-4} = 0 \Rightarrow y = 2$

$\sqrt{x-4} = |y-2| \geq 0 \Rightarrow$ تابع است.

ب) $|y| + x^2 = x + 2 \Rightarrow |y| = -x^2 + x + 2$

$\xrightarrow{x=0} |y| = 2 \Rightarrow y = \pm 2$ تابع نیست

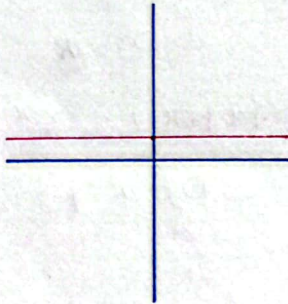
د) $x = \cos y$

$\xrightarrow{x=b} y = k\pi$ تابع نیست

الف) $y = 1$

$f(x) = 1$

$\Rightarrow f(x): y = 1$



ب) $y = ax + b$ تابع خطی

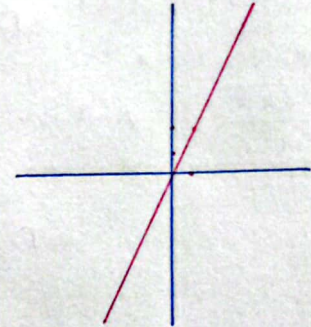
$m = 2$

$\Rightarrow y = 2x + b$

$x = 1, y = 2 \Rightarrow 2 = 2 \times 1 + b$

$\Rightarrow b = 0$

$\Rightarrow y = 2x$



الف) $f(1) = a + b = 1$

$f(2) = 2a + b = 2$

$\Rightarrow a + b = 1, 2a + b = 2$

$\Rightarrow a = 1, b = 0$

$\Rightarrow a + 2b = 1 + 2 \times 0 = 1$

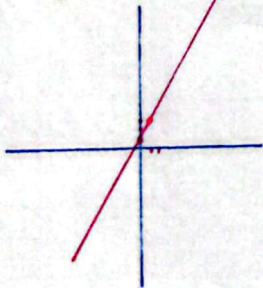
ب) $\min \left| \frac{-b}{\frac{r}{a}} \right| = \left| \frac{-b}{\frac{r}{a}} \right| = 1 \quad y = x^2 + ax + b$

$\Rightarrow \frac{-b}{\frac{r}{a}} = 2 \Rightarrow -a = 2 \times 1 \Rightarrow a = -2$

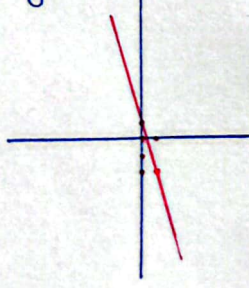
$\Rightarrow \frac{-a}{\frac{r}{a}} = 1 \Rightarrow \frac{-(-2) + r(b)}{r \times a} = 1 \Rightarrow (-2) + r b = 2$

$\Rightarrow a + 2b = -2 + 2 \times 2 = 2$

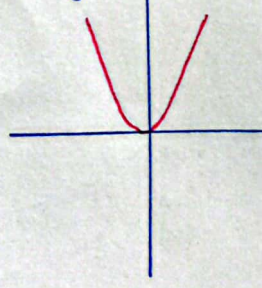
الف) $y = 2x + 1$



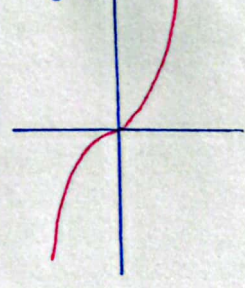
ب) $y = -2x + 1$



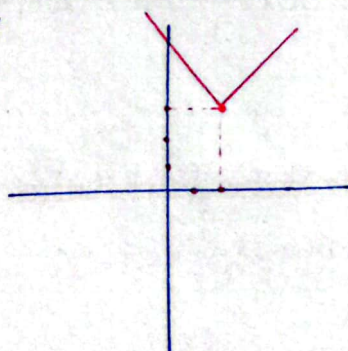
ج) $x^2 = y$



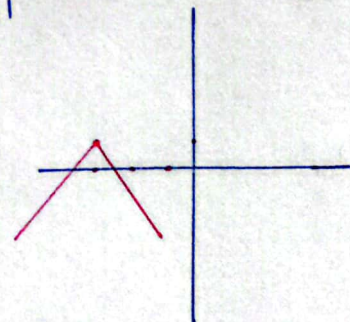
د) $x^3 = y$



الف) $y = |x - 2| + 2$



ب) $y = -|x + 1| + 1$



الف) $\frac{x+f}{x^2-fx} \cdot y$ $x^2-fx \neq 0 \Rightarrow x(x-f) \neq 0$
 $\Rightarrow D_f = \mathbb{R} - \{0, f\}$

ب) $y = \frac{x+f}{x^2-4x+4}$ $x^2-4x+4 \neq 0$
 این عبارت را می توان نوشت
 $\Rightarrow D_f = \mathbb{R}$

ج) $y = \frac{x+f}{x^2+x+f}$ $\Rightarrow x^2+x+f \neq 0$
 این عبارت را می توان نوشت
 $\Rightarrow D_f = \mathbb{R}$

د) $y = \frac{x+f}{x^2-fx^2}$ $\Rightarrow x^2-fx^2 \neq 0$
 $\Rightarrow x^2(x-f) \neq 0$
 $\Rightarrow x(x+f)(x-f) \neq 0$
 $\Rightarrow D_f = \mathbb{R} - \{0, f, -f\}$

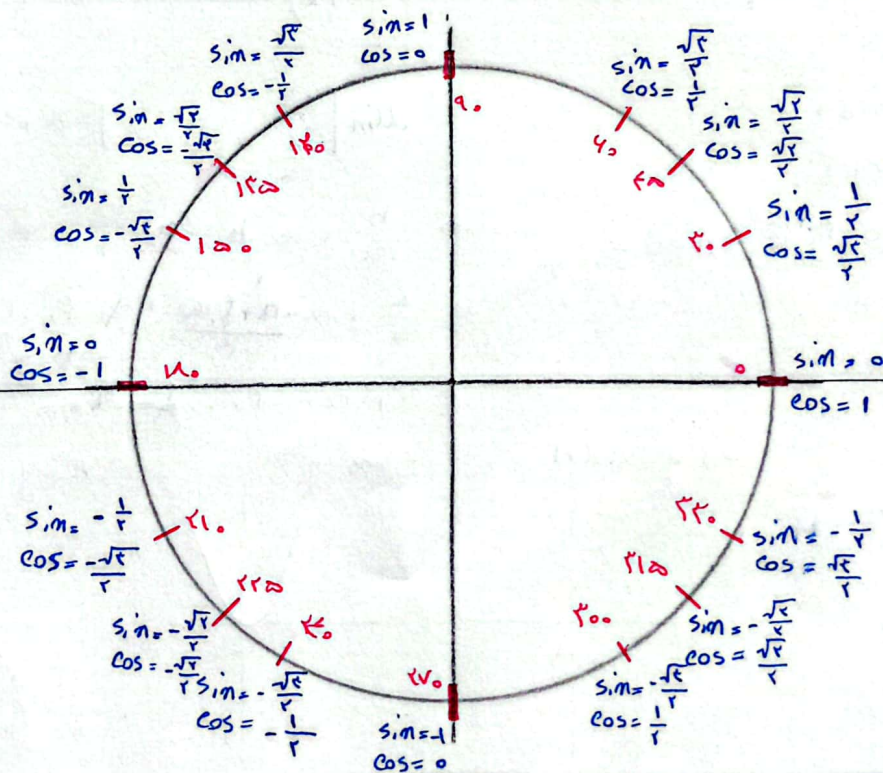
الف) $y = \sqrt{4-x} + \sqrt{x-2}$
 $4-x \geq 0 \Rightarrow x \leq 4$
 $x-2 \geq 0 \Rightarrow x \geq 2$
 $\Rightarrow D_f = [2, 4]$

ب) $y = \frac{x^2+1}{x^2+1}$ $\Rightarrow x^2+1 \neq 0$
 این عبارت همیشه مثبت است
 $\Rightarrow D_f = \mathbb{R}$

ج) $y = \frac{\sqrt{x-2}}{x-f}$ $\Rightarrow x-2 \geq 0 \Rightarrow x \geq 2$
 $x-f \neq 0 \Rightarrow x \neq f$

د) $y = \frac{x^2+1}{|x|+x^2}$ $\Rightarrow |x|+x^2 \neq 0 \Rightarrow x \neq 0$
 $\Rightarrow D_f = \mathbb{R} - \{0\}$

$\Rightarrow D_f = [2, f) \cup (f, +\infty)$



الف) $\frac{2\pi}{r} = 120^\circ$ $\cos 120^\circ = -\frac{1}{r}$ $\sin 120^\circ = -(-\frac{1}{r}) \Rightarrow \sin 120^\circ = \frac{1}{r} \Rightarrow x = 2k\pi + \frac{\pi}{3}, 2k\pi + \frac{2\pi}{3}$

ب) $\frac{11\pi}{4} = 315^\circ$ $\cos 315^\circ = \frac{\sqrt{2}}{r}$ $\sin 315^\circ = -\frac{\sqrt{2}}{r} \Rightarrow x = 2k\pi + \frac{7\pi}{4}, 2k\pi + \frac{5\pi}{4}$
 $x = 2k\pi + \frac{7\pi}{4}, 2k\pi + \frac{5\pi}{4}$