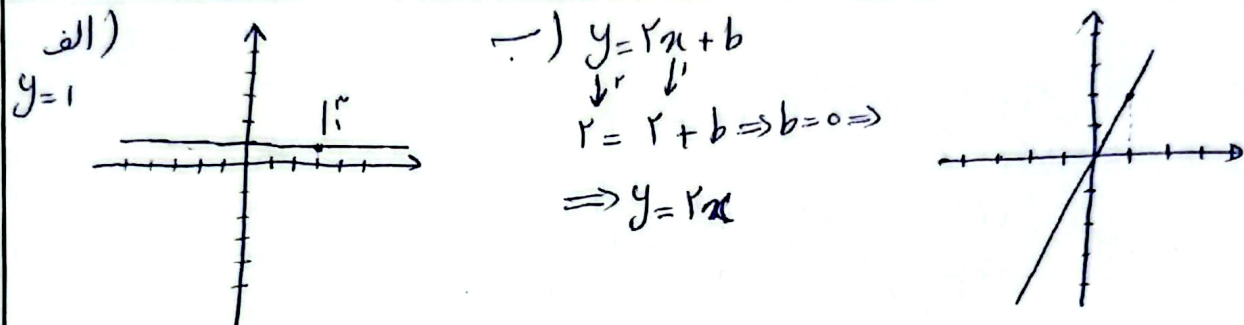


الف) $y^3 = 2x^2 + x \Rightarrow \begin{cases} y_1^3 = 2x_1^2 + x_1 \\ y_r^3 = 2x_r^2 + x_r \end{cases} \xrightarrow{x_1 = x_r} y_1^3 = y_r^3 \Rightarrow y_1 = y_r \checkmark$ تابع است

ب) $|y| + x^2 = x + 3 \xrightarrow{x=0} |y| = 3 \Rightarrow y = \pm 3$ تابع نیست

ج) $\underbrace{\sqrt{x-4}}_{+1.0} + \underbrace{|y+2|}_{+1.0} = 0 \Rightarrow \begin{cases} x=4 \\ y=-2 \end{cases} \checkmark$ تابع است

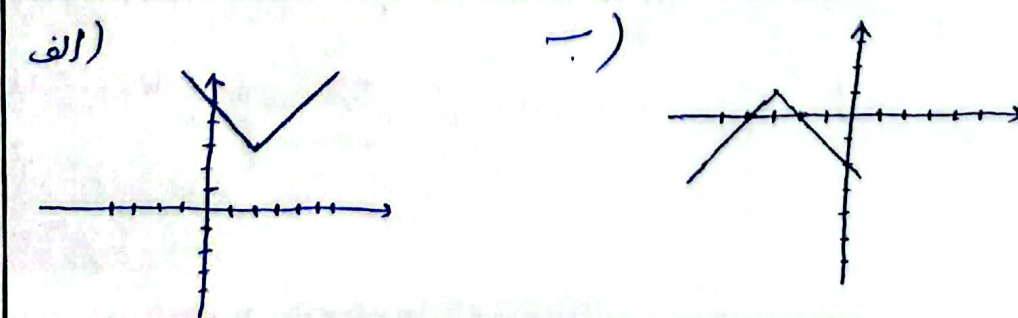
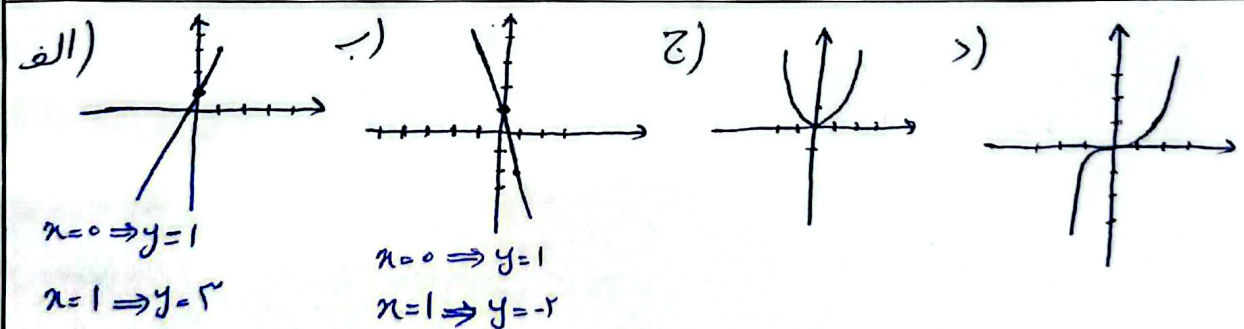
د) $x = \cos y \xrightarrow{x=0} \cos y = 0 \Rightarrow y = \frac{\pi}{2}, \frac{3\pi}{2}, \dots = k\pi + \frac{\pi}{2}$



الف) تابع صاف $\rightarrow y = x \Rightarrow a=1, b=0 \Rightarrow a+2b = 1+0 = \boxed{1}$

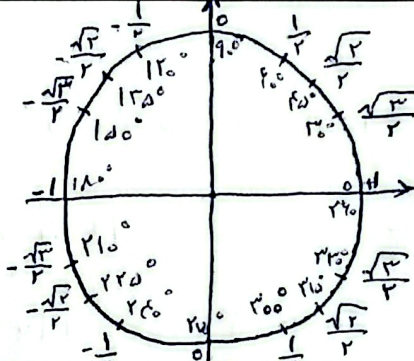
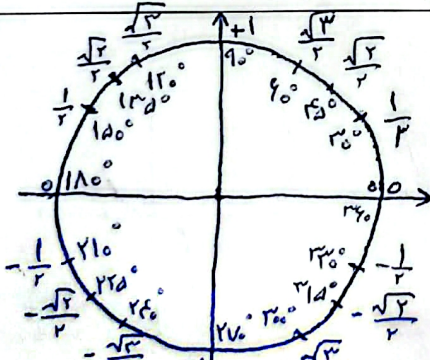
ب) $\text{Min} |r| \Rightarrow r = -\frac{a}{2} \Rightarrow \underline{a = -2} \Rightarrow y = x^2 - 2x + b$

$\xrightarrow{x=2, y=1} 1 = 4 - 4 + b \Rightarrow \underline{b = 1} \Rightarrow a+2b = -2+2 = \underline{0}$



دو تابع راست برآورد بالا
 $x=0 \Rightarrow y=4$

$y=0 \Rightarrow x = -2, -4$
 $x=0 \Rightarrow y = -2$

الف) $x^r - f x \neq 0 \quad x(x-f) \neq 0 \Rightarrow D_f = \mathbb{R} - \{f, 0\}$ ب-) $x^r - \forall x + f \neq 0 \quad \Delta = b^r - f a c = f^2 - 4f = -1 \Rightarrow D_f = \mathbb{R}$ ج) $x^r + x + f \neq 0 \quad \Delta = b^r - f a c = 1 - 4f = -1 \Rightarrow D_f = \mathbb{R}$ د) $x^f - f x^r \neq 0 \Rightarrow x^r(x^r - f) = x^r(x-1)(x+1) \neq 0 \Rightarrow D_f = \mathbb{R} - \{0, 1, -1\}$	٦
الف) $\left. \begin{array}{l} 4-x \geq 0 \Rightarrow x \leq 4 \\ x-2 \geq 0 \Rightarrow x \geq 2 \end{array} \right\} \Rightarrow D_f = [2, 4] \quad \text{ب-) } x+1 \neq 0 \Rightarrow D_f = \mathbb{R}$ (نیز برای x مثبت یا صفر) ج) $\left. \begin{array}{l} x-2 \geq 0 \Rightarrow x \geq 2 \\ x-f \neq 0 \Rightarrow x \neq f \end{array} \right\} \Rightarrow D_f = [2, +\infty) - \{f\}$ د) $x^r + x \neq 0 \quad \oplus \quad \ominus \Rightarrow D_f = \mathbb{R} - \{0\}$	٧
	٨
	٩
الف) $\cos \frac{2\pi}{3} = -\frac{1}{2} \xRightarrow{x(-1)} \frac{1}{2} = \sin x \Rightarrow x = \frac{\pi}{6}, \frac{5\pi}{6}, \dots \Rightarrow x = \left\{ 2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6} \right\}$ ب-) $\cos \frac{11\pi}{6} = \frac{\sqrt{3}}{2} \xRightarrow{x(-1)} -\frac{\sqrt{3}}{2} = \sin x \Rightarrow x = \frac{4\pi}{3}, \frac{2\pi}{3}, \dots \Rightarrow x = \left\{ 2k\pi + \frac{4\pi}{3}, 2k\pi + \frac{2\pi}{3} \right\}$	١٠