

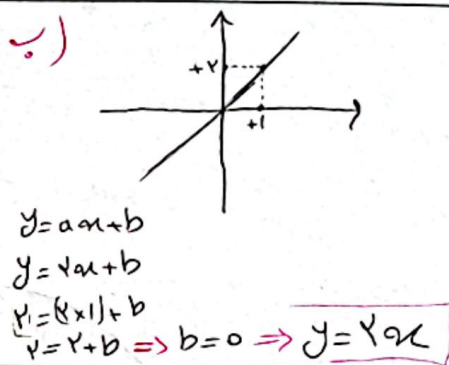
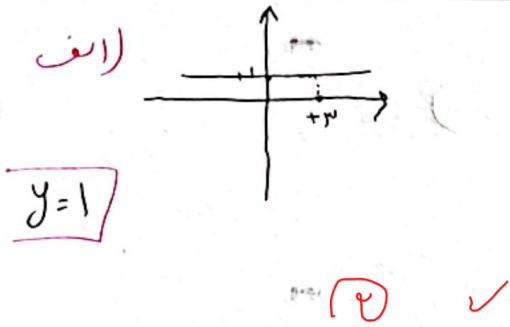
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الف) $y_1^3 = 2x_1^2 + 9x_1$
 $y_2^3 = 2x_2^2 + 9x_2$ } $x_1 = x_2 \rightarrow y_1^3 = y_2^3 \Rightarrow y_1 = y_2$ تابع نیست

ب) $x = 0 \Rightarrow |y| = 3 \Rightarrow y = \pm 3$ تابع نیست

ج) $\sqrt{x-4} = 0 \Rightarrow x-4 = 0 \Rightarrow x = 4, |y-2| = 0 \Rightarrow y-2 = 0 \Rightarrow y = 2$ $\left| \begin{matrix} 4 \\ 2 \end{matrix} \right.$ جمع دو عدد مثبت صفر شده تابع نیست

د) $x = 0 \Rightarrow \cos y = 0 \Rightarrow y = \frac{\pi}{2}, \frac{3\pi}{2}, \dots$ تابع نیست



الف) $y = ax \Rightarrow a = 1, b = 0$

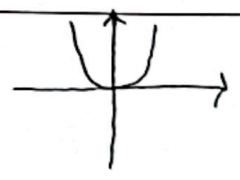
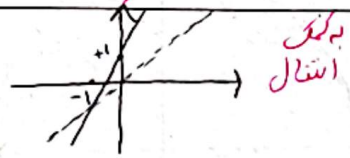
$\Rightarrow a + 2b = 1 + 2(0) = 1$

ب) $y = ax^2 + bx + c$
 $\Rightarrow -\frac{a}{2} = 1 \Rightarrow a = -2$

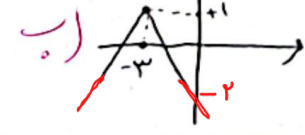
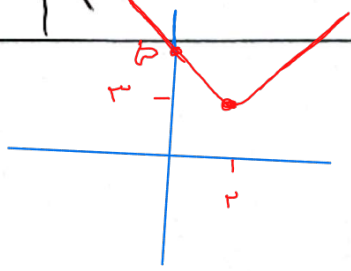
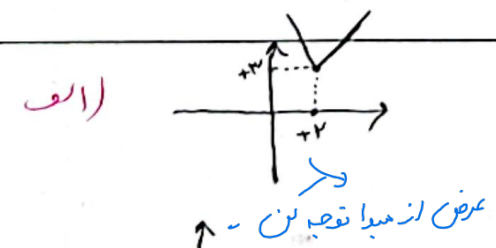
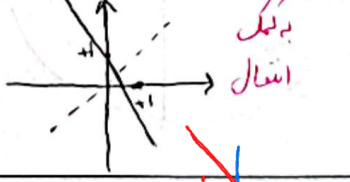
$\Rightarrow 1 = 1^2 + (-2 \times 1) + b \Rightarrow 1 = -1 + b \Rightarrow b = 2$

$\Rightarrow a + 2b = -2 + 2(2) = 2$

الف) $x = 0 \Rightarrow y = +1$ عرض از مبدأ
 $y = 0 \Rightarrow x = -\frac{1}{2}$ طول از مبدأ



ب) $x = 0 \Rightarrow y = +1$ عرض از مبدأ
 $y = 0 \Rightarrow x = \frac{1}{3}$ طول از مبدأ



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الف) $x^2 - 4x \neq 0 \Rightarrow x(x-4) \neq 0 \Rightarrow \frac{0}{+} \frac{4}{-} \Rightarrow D_f = R - \{0, 4\}$

ب) $x^2 - 7x + 12 \neq 0 \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \Rightarrow x = \frac{7 \pm \sqrt{49 - 48}}{2} \Rightarrow D_f = R$

ج) $x^2 + x + 4 \neq 0 \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \Rightarrow x = \frac{-1 \pm \sqrt{1 - 16}}{2} \Rightarrow D_f = R$

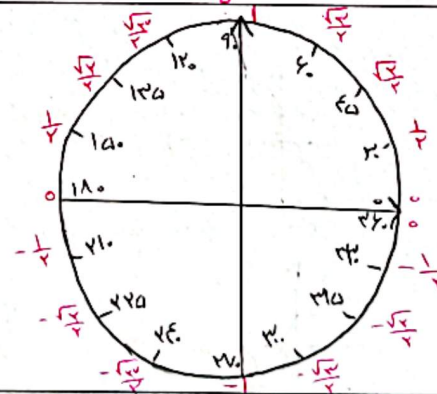
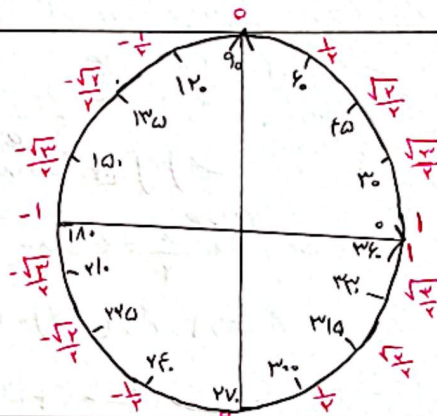
د) $x^4 - 4x^2 \neq 0 \Rightarrow x^2(x^2 - 4) \neq 0 \Rightarrow \frac{-2}{+1} \frac{0}{-1} \frac{2}{-1} \Rightarrow D_f = R - \{+2, 0, -2\}$

الف) $4 - x \geq 0 \Rightarrow x \leq 4, \quad x - 2 \geq 0 \Rightarrow x \geq 2 \quad 2 \leq x \leq 4 \Rightarrow D_f = [2, 4]$

ب) $x^2 + 1 \neq 0 \Rightarrow x^2 \neq -1 \Rightarrow D_f = R$

ج) $x - 4 \neq 0 \Rightarrow x \neq 4, \quad x - 2 \geq 0 \Rightarrow x \geq 2 \Rightarrow D_f = [2, +\infty) - \{4\}$

د) $|x| + x^2 \neq 0 \Rightarrow \begin{matrix} \times & \checkmark & \checkmark \\ \ominus & \ominus & \oplus \end{matrix} \Rightarrow D_f = R - \{0\}$



الف) $-\frac{1}{2} \xrightarrow{\text{قرینه}} \frac{1}{2} \Rightarrow \frac{\pi}{6}, \frac{5\pi}{6}$

ب) $-\frac{\sqrt{3}}{2} \xrightarrow{\text{قرینه}} \frac{\sqrt{3}}{2} \Rightarrow \frac{2\pi}{3}, \frac{4\pi}{3}$