

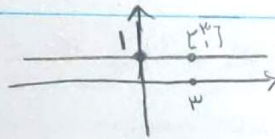
الف) $y_1' = 2x_1^2 + x_1 - 1$ $y_2' = 2x_2^2 + x_2 - 1$ $\xrightarrow{\text{if } x_1 = x_2}$ $y_1' = y_2' \rightarrow y_1 = y_2$ $\xrightarrow{\text{تابع}}$ $y = \sqrt{2x^2 + x - 1}$

ب) $\text{if } x=0 \rightarrow |y|=3 \rightarrow y = \pm 3$ $\xrightarrow{\text{تابع نیست}}$

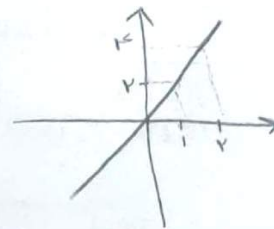
ج) $\sqrt{x} = 4 = 0 \rightarrow x = +4$ $|y-2|=0 \rightarrow y=2$ $\xrightarrow{\text{تابع}}$

د) $x = \cos y \xrightarrow{\text{if}} x=0 \Rightarrow \cos y = 0 \rightarrow y = 90^\circ, 270^\circ$ $\xrightarrow{\text{تابع نیست}}$

الف) $y=1 \Rightarrow \text{تابع}$



ب) $y = x^2 + b$ $\xrightarrow{\text{if } x=1, y=2}$ $2 = 1 + b \rightarrow b=1$ $\rightarrow y = x^2 + 1$



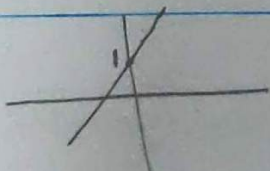
الف) $y=x \rightarrow a=1, b=0 \Rightarrow 1+0=1$

ب) $\frac{-b}{a} = 2 \rightarrow -b = 4 \rightarrow b = -4 \Rightarrow a = -4$ $\xrightarrow{\text{تابع}}$ $y = -4x - 4$

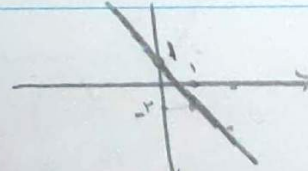
$Ax^2 + Bx + C$

$-4 + 10 = 6 \checkmark$

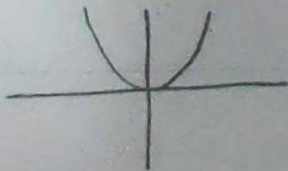
الف)



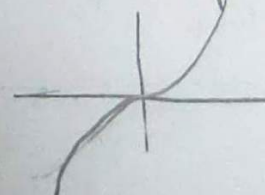
ب)



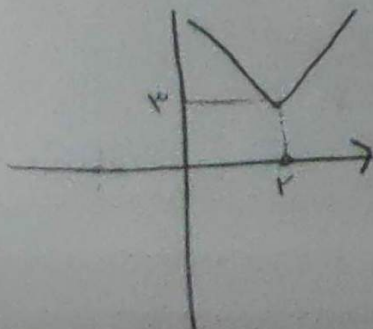
ج)



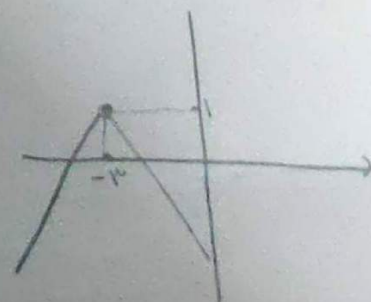
د)



الف)



ب)



الف) $x^2 - 4x \neq 0$ $x(x-4) \neq 0$ $\left. \begin{matrix} x \neq 4 \\ x \neq 0 \end{matrix} \right\} D_f = \mathbb{R} - \{0, 4\}$

ب) $x^2 - 4x + 4 \neq 0$ $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \rightarrow \frac{4 \pm \sqrt{16 - 16}}{2} \rightarrow \frac{4 \pm 0}{2} \rightarrow D_f = \mathbb{R}$

ج) $x^2 + x + 2 \neq 0$ $\frac{-1 \pm \sqrt{1 - 8}}{2} \rightarrow D_f = \mathbb{R}$

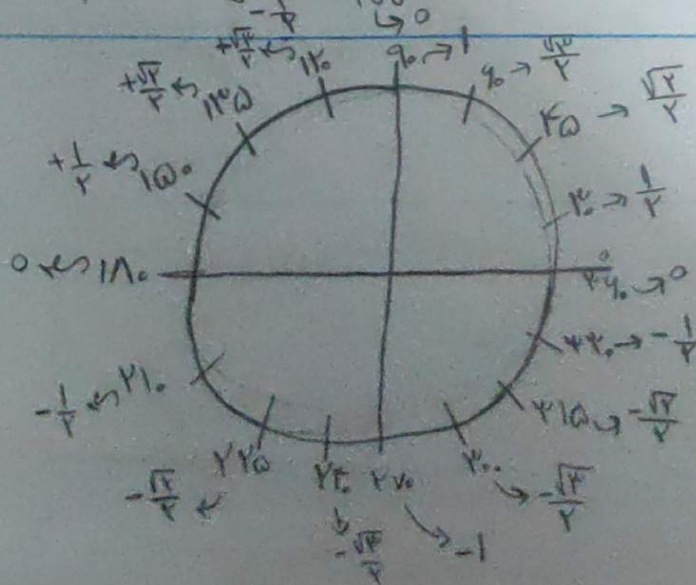
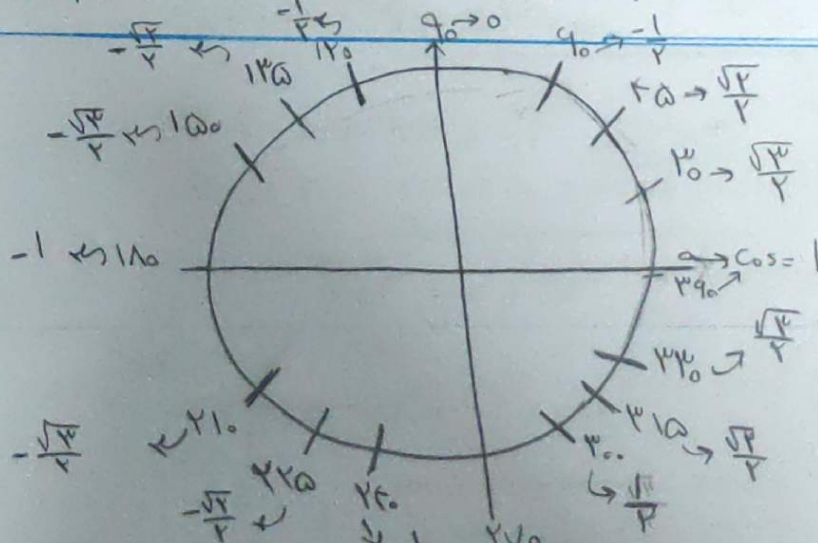
د) $x^2 - 4x^2 \neq 0$ $x^2(4 - x^2) \rightarrow x^2(2 - x)(2 + x) \neq 0$ $D_f = \mathbb{R} - \{2, -2, 0\}$

الف) $\begin{matrix} 4 - x > 0 \\ x < 4 \end{matrix}$ $\begin{matrix} x - 2 > 0 \\ x > 2 \end{matrix}$ $D_f = (2, 4)$

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

ج) $\begin{matrix} x - 2 > 0 \\ x > 2 \end{matrix}$ $\begin{matrix} x - 4 \neq 0 \\ x \neq 4 \end{matrix}$ $D_f = \{x \mid x > 2, x \neq 4\} \subseteq D_f = (2, 4) \cup (4, +\infty)$

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



الف) $\cos \frac{2\pi}{3} \xrightarrow{120^\circ} -\frac{1}{2} \xrightarrow{\text{قرينة}} \frac{1}{2} = \sin \left\{ 2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6} \right\}$

ب) $\cos \frac{11\pi}{6} \xrightarrow{330^\circ} +\frac{\sqrt{3}}{2} \xrightarrow{\text{قرينة}} -\frac{\sqrt{3}}{2} = \sin \left\{ \frac{4\pi}{3} + 2k\pi, \frac{5\pi}{3} + 2k\pi \right\}$

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