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تابع است $y_1 = y_2 \rightarrow y_1^x = y_2^x \rightarrow y_1^3 = y_2^3 \Rightarrow y = 2x^2 + x$ تعریف ریاضی (الف)

یک نظریه‌ی دستگاه معادلات $\rightarrow$ تابع نیست $\rightarrow y = +3 \rightarrow x_{20}$ مثال نقض (ب)

تابع است $\rightarrow \left. \begin{matrix} x_{24} \rightarrow x_{20} \\ y_{22} \rightarrow y_{20} \end{matrix} \right\} \rightarrow$ جمع دو عبارت مثبت صفر شده پس هر دو صفر می‌شوند. (ج)

د) مثال نقص $x=0 \rightarrow y = \frac{\pi}{2}, \frac{3\pi}{2} \rightarrow (90^\circ, 270^\circ) \rightarrow$ تابع سینس

الف) $\mathbb{R}^2 \xrightarrow{f} \mathbb{R}(\mathbb{R} - \{0\}) \xrightarrow{g} \mathbb{R} \xrightarrow{h} D_f = \mathbb{R} - \{0, 1\}$

ب) $\Delta = 49 - 4(14) = 49 - 56 = -15 \rightarrow$ ریشه ندارد (دلتا منفی) $\rightarrow Df = \mathbb{R}$

2.) $x^2 + x + 4 \rightarrow$ حسیہ نسبت $\rightarrow$ نفی سود $\rightarrow D_f = \mathbb{R}$

$$2) \quad \pi^{\pm} f \pi^{\pm} \rightarrow \pi^{\pm} (\pi^{\pm} f) \rightarrow \pi^{\pm} 0, \pm 1 \rightarrow D_f = \mathbb{R} - \{0, \pm 1\}$$

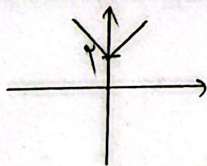
الف) $4-270 \rightarrow 472 \quad 2-270 \rightarrow 270 \Rightarrow 47272 \rightarrow Df_2[2,4]$

(ب) $Df_z: \mathbb{R} \rightarrow \mathbb{R}$ — $\circ$ فی سود $\rightarrow$ مستقیمت $\rightarrow$ $n+1$

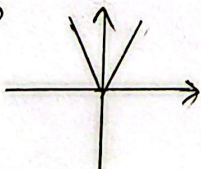
2.) $n-1 \neq 0$, $n-1 \geq 0 \rightarrow n \geq 1 \rightarrow Df = [1, f) \cup (f, +\infty)$

c) $|x| + x^r \rightarrow x \geq 0 \rightarrow D_f = \mathbb{R} - \{0\}$

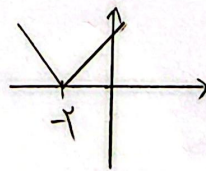
(الف)



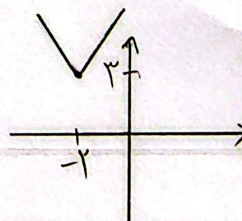
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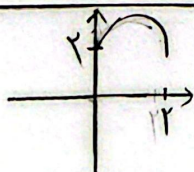
2.)



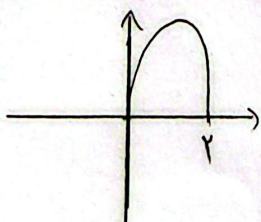
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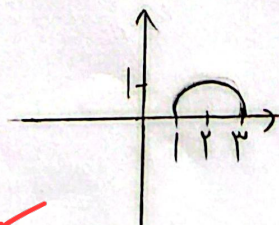
الف



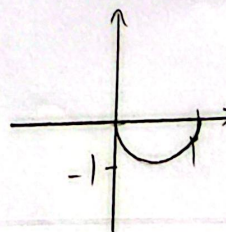
۱۱)



c)



.)



الف) $(x-2)(x-3)(x-4)$

$$x \begin{array}{c|c} & \begin{array}{ccc} 2 & 3 & 4 \end{array} \\ \hline & - \quad + \quad - \quad + \end{array}$$

② ✓

ب) $(x-2)(x-3)^2(x-4)$

$$x \begin{array}{c|c} & \begin{array}{ccc} 2 & 3 & 4 \end{array} \\ \hline & + \quad - \quad - \quad + \end{array}$$

الف) $\frac{(x-2)(x-4)}{x-3}$

$$x \begin{array}{c|c} & \begin{array}{ccc} 2 & 3 & 4 \end{array} \\ \hline & - \quad + \quad - \quad + \end{array}$$

ب) $\frac{(x-2)(x-4)}{(x-3)^2}$

$$x \begin{array}{c|c} & \begin{array}{ccc} 2 & 3 & 4 \end{array} \\ \hline & + \quad - \quad - \quad + \end{array}$$

② ✓

الف) $y_2 = \frac{x^3 - 3x + 2}{x-3} \rightarrow x(x^2 - 3) = -2 \rightarrow x = -1, 2$

$$x \begin{array}{c|c} & \begin{array}{ccc} -1 & 2 & 3 \end{array} \\ \hline & + \quad - \quad - \quad + \end{array}$$

② ✓

ب) $y_2 = \frac{x^3 - 3x + 2}{x^2 - 4x + 3} \rightarrow \frac{(x-1)(x-2)}{(x-3)(x-1)} = \frac{x-2}{x-3}$

$$x \begin{array}{c|c} & \begin{array}{ccc} 1 & 2 & 3 \end{array} \\ \hline & + \quad - \quad - \quad + \end{array}$$

الف) $\frac{x^2 - 1}{x^2 + x + 2} \rightarrow x^2(x-1) \rightarrow x = 0, \pm 1$

$$x \begin{array}{c|c} & \begin{array}{ccc} -1 & 0 & 1 \end{array} \\ \hline & + \quad - \quad - \quad + \end{array}$$

ب) $\frac{x^2 + 3x + 4}{x^2 + 2x + 3}$

$x \in \mathbb{R}^+$

② ✓

$x^2 + 2x + 3 \rightarrow$ دایره ناقص

الف) $\sqrt{\frac{x^3 - 1}{x^3 x}} \rightarrow (x-1)(x^2 + x + 1) \rightarrow (x^2 + x + 1)$

$$x \begin{array}{c|c} & \begin{array}{ccc} -1 & 0 & 1 \end{array} \\ \hline & + \quad - \quad - \quad + \end{array}$$

دایره ناقص؟

$(-\infty, -1] \cup (0, +\infty) - \{1\}$

ب) $\sqrt{\frac{x^2 - 4}{x^2 + 5x + 4}} \rightarrow (x-2)(x+2) \rightarrow (x-1)(x-4)$

$$x \begin{array}{c|c} & \begin{array}{ccc} -1 & 2 & 4 \end{array} \\ \hline & + \quad - \quad - \quad + \end{array}$$

①

$(-\infty, -4] \cup (0, +\infty) - \{4\}$