

الف) $y'' - x = 2x^2 \Rightarrow y'' = 2x^2 + x \Rightarrow y' = x(2x+1) \rightarrow$ تابع است

ب) $|y| + x^2 = x + 3 \Rightarrow x + 3 - x^2 \rightarrow$ تابع نیست

ج) $\sqrt{x-4} + |y-1| = 0 \Rightarrow \sqrt{x-4} = -|y-1| \rightarrow$ تابع نیست

د) $x = \cos y \rightarrow x = 0 \Rightarrow y = 90^\circ \rightarrow y = 270^\circ \rightarrow$ تابع نیست

الف) $y = \frac{x+4}{x^2-4x} \quad \mathbb{R} - \{-4, 0, 4\}$

ب) $y = \frac{x+4}{x^2-4x+4} \quad x+4 > 0 \quad x^2-4x+4 > 0 \rightarrow$ $D_f = \mathbb{R}$

ج) $\frac{x+4}{x^2+x+4} \rightarrow D_f = \mathbb{R}$

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

الف) $\sqrt{y-2} + \sqrt{x-2} = D_f = [2, 6]$

ب) $\frac{x^2+1}{x^2+1} = \mathbb{R}$

ج) $\frac{\sqrt{x-2}}{x-4} \rightarrow D_f = (-\infty, 2] \cup (4, +\infty)$

د) $\frac{x^2+3}{|x|+x^2} = D_f = (-\infty, 0) \cup (0, +\infty)$

الف) $y = |x| + 1 =$

ب) $y = 2|x| =$

ج) $y = |x+1| =$

د) $y = |x+1| + 1 =$

الف) $F_{x+1} =$

ب) $2F(x) =$

ج) $F(x-1) =$

د) $-F(x) =$

$$\text{الف) } y = (x-2)(x-3)(x-5) =$$

$$\frac{2 \quad 3 \quad 5}{-\phi + \phi - \phi +}$$

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$$\text{ب) } y = (x-2)(x-3)^2(x-5) =$$

$$\frac{2 \quad 3^* \quad 5}{+\phi - \phi - \phi +}$$

$$\text{الف) } \frac{(x-2)(x-5)}{x-3} =$$

$$\frac{2 \quad 3 \quad 5}{-\phi + \phi - \phi +}$$

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$$\text{ب) } \frac{(x-2)(x-5)}{(x-3)^2} =$$

$$\frac{2 \quad 3^* \quad 5}{+\phi - \phi - \phi +}$$

$$\text{الف) } \frac{x^3 - 3x + 2}{x-3} = \frac{1 \quad 3}{+\phi - \phi +}$$

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$$\text{ب) } \frac{x^3 - 3x + 2}{x^2 - 5x + 3} = \frac{(x-1)(x-2)}{(x-1)(x-3)} = \frac{1^* \quad 2 \quad 3}{+\phi + \phi - \phi +}$$

$$\text{الف) } y = \frac{x^5 - x^2}{x^2 + x + 2} = \frac{-1 \quad 0 \quad 1}{-\phi + \phi - \phi +}$$

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$$\text{ب) } y = \frac{x^2 + 3x + 5}{x^2 + 5x + 3} = (+\infty, -\infty) \longrightarrow \text{نقطه (IR) ندارد}$$

$$\text{الف) } y = \sqrt{\frac{x^3 - 1}{x^3 - x}} = \frac{(x-1)(x^2 + x + 1)}{x(x-1)(x+1)} = \frac{-1 \quad 0 \quad 1}{+\phi - \phi + \phi +} \quad p_f = \{R - \{0, 1\}\}$$

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$$\text{ب) } y = \sqrt{\frac{x^2 - 19}{x^2 - 4x + 5}} = \sqrt{\frac{(x-5)(x+5)}{(x-1)(x-5)}} \Rightarrow \frac{-5 \quad 1 \quad 5}{+\phi - \phi + \phi +} \quad (-\infty, -5) \cup (1, 5) \cup (5, +\infty)$$