

الف) $\frac{x+3}{(x-1)(2x^2+5x-3)}$ $\frac{x+3}{2(x-1)(x+3)(x-\frac{1}{2})}$ $D_f = \mathbb{R} - \{1, -\frac{1}{2}, \frac{1}{2}\}$ ✓

ب) $\frac{x+3}{(x+1)(2x^2+7x+3)}$ $= \frac{x+3}{2(x+1)(x+\frac{1}{2})(x+3)}$ $D_f = \mathbb{R} - \{-1, -\frac{1}{2}, -3\}$ ✓

الف) $\frac{x+3}{(x-1)(x^2-x+1)}$ $D_f = \mathbb{R} - \{1\}$ ✓

ب) $\sqrt{\frac{x+3}{(x-1)(x^2-x+1)}}$ $\rightarrow$ $\frac{-3}{+4} - 0 \rightarrow D_f = \mathbb{R} - \{1, -\frac{3}{4}\}$ ✓

$x^2 - 7x + 10 = (x-5)(x-2)$

$x^2 + 3x = x(x+3)$

$D_f = \mathbb{R} - \{5, 2, -3\}$ ✓

الف) $x > \frac{1}{2} \rightarrow x-2 \Rightarrow x \neq 2$ $\frac{-3 \leq x \leq \frac{1}{2}}{\rightarrow} -2x-1-x-3 = -3x-4 \Rightarrow x \neq -\frac{4}{3}$

$x < -\frac{3}{2} \rightarrow -x+2 \Rightarrow x \neq 2$ $D_f = \mathbb{R} - \{2, -\frac{4}{3}\}$ ✓

ب) $|2x+1| - |x+2| \geq 0$ $2x+1 \geq x+2 \rightarrow x \geq 1$ $2x+1 \geq x+2 \rightarrow x \geq 1$

$3x^2 - 2x - 1 \geq 0 \rightarrow 3(x-2)(x+\frac{1}{3}) \geq 0$ $\rightarrow D_f = \mathbb{R} - (-\frac{1}{3}, 2)$ ✓

الف) $\log_2(1-\log_2 x)$ $x > 0$ (I) $1-\log_2 x > 0 \rightarrow \log_2 x < 1 \rightarrow x < 2$ (II)

$I \cap II \rightarrow D_f = (0, 2)$ ✓

ب) $\log_2(1-\log_2 \frac{x}{2})$ $x > 0$ (I) $1-\log_2 \frac{x}{2} > 0 \rightarrow \log_2 \frac{x}{2} < 1 \rightarrow x > \frac{1}{2}$

$I \cap II \rightarrow D_f = (\frac{1}{2}, +\infty)$ ✓

$$f(x) = \sqrt{\log_{\frac{1}{4}}(2x-1)} \quad 2x-1 > 0 \rightarrow x > \frac{1}{2} \quad (I)$$

$$\log_{\frac{1}{4}}(2x-1) > 0 \rightarrow 2x-1 > 1 \rightarrow x > 1 \quad (II) \quad D_f = (1, 3] \checkmark$$

$$\log_{\frac{1}{4}} \log_{\frac{1}{4}}(2x-1) > 0 \rightarrow \log_{\frac{1}{4}}(2x-1) \leq 1 \rightarrow 2x-1 \leq 4 \rightarrow x \leq 3 \quad (III)$$

$$g(x) = \log(2\cos x + 1)$$

$$\rightarrow 2\cos x + 1 > 0 \rightarrow \cos x > -\frac{1}{2}$$

$$D_f = (2k\pi - \frac{2\pi}{3}, 2k\pi + \frac{2\pi}{3}) \checkmark$$

$$D_f = (-\infty, -1) \checkmark$$

$$g(x) = \sqrt{\log \frac{x-1}{x+1}}$$

$$\frac{x-1}{x+1} > 0 \rightarrow \frac{-1}{+0} = - \quad (-\infty, -1) \cup (1, +\infty) \quad (I)$$

$$\log \frac{x-1}{x+1} > 0 \rightarrow \frac{x-1}{x+1} > 1 \rightarrow \frac{-2}{x-1} > 0 \rightarrow \frac{-1}{+0} = - \quad (-\infty, -1) \quad (II)$$

عبارت فقط یک ریشه دارد چون
بازه ۳ است پس ریشه متفاوت
نموده پس ضرب برابر صفر است

$$a + 2 = 0 \Rightarrow a = -2$$

$$x = 3 \rightarrow -7 + b = 0 \Rightarrow b = 7 \checkmark$$

$$\text{چون به این R اکتفا می شود پس} \quad 1 + 4m^2 \leq 0 \rightarrow 4m^2 - 4 \leq 0 \rightarrow m^2 \leq 1$$

$$-1 \leq m \leq 1$$

$$\text{اقل و بیشترین دگترین} \quad 1 - (-1) = 2 \quad (2) \checkmark$$

$$f(x) = \frac{\sqrt{4-x^2}}{[x] + [-x] + 1}$$

$$4-x^2 \geq 0 \rightarrow -2 \leq x \leq 2$$

$$[x] + [-x] + 1 \neq 0 \rightarrow [x] + [-x] \neq -1 \rightarrow x \in \mathbb{Z}$$

$$\Rightarrow D_f = \{-2, -1, 0, 1, 2\} \checkmark \quad (5)$$