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الف)
$$\frac{2x^3 + 3x^2 - 11x + 5}{-2x^3 + 12x^2 - 18x + 9} \div \frac{x-1}{2x^2 + 0x - 5}$$

$$\frac{2x^3 + 3x^2 - 11x + 5}{-2x^3 + 12x^2 - 18x + 9} \cdot \frac{2x^2 + 0x - 5}{(2x+4)(x-\frac{1}{2})}$$

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$\Rightarrow \frac{x+5}{(2x+4)(x-\frac{1}{2})(x-1)} \Rightarrow D_f, \mathbb{R} - \{\frac{1}{2}, 1, -\frac{1}{2}\}$

ب)
$$\frac{2x^3 + 3x^2 + 10x + 5}{-2x^3 - 12x^2 - 18x - 9} \div \frac{x+1}{2x^2 + 6x + 5}$$

$$\frac{2x^3 + 3x^2 + 10x + 5}{-2x^3 - 12x^2 - 18x - 9} \cdot \frac{2x^2 + 6x + 5}{(2x+4)(x+\frac{1}{2})}$$

$$\frac{2x^3 + 3x^2 + 10x + 5}{-2x^3 - 12x^2 - 18x - 9} \cdot \frac{2x^2 + 6x + 5}{(2x+4)(x+\frac{1}{2})}$$

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$\Rightarrow \frac{x+5}{(x+1)(2x+4)(x+\frac{1}{2})} \Rightarrow D_f, \mathbb{R} - \{-\frac{1}{2}, -1, -\frac{3}{2}\}$

الف)
$$\frac{x^3 - 2x^2 + 2x - 1}{-x^3 + x^2 - x + 1} \div \frac{x-1}{x^2 - x + 1}$$

$$\frac{x^3 - 2x^2 + 2x - 1}{-x^3 + x^2 - x + 1} \cdot \frac{x^2 - x + 1}{x^2 - x + 1}$$

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$$\frac{x^3 - 2x^2 + 2x - 1}{-x^3 + x^2 - x + 1} \cdot \frac{x^2 - x + 1}{x^2 - x + 1}$$

$\Rightarrow \frac{x+5}{(x^2 - x + 1)(x-1)} \Rightarrow D_f, \mathbb{R} - \{1\}$

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

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$D_f, \mathbb{R} - (-5, 1]$

$y = \frac{x+5}{x^2 - x + 1} \div \frac{x-1}{x^2 - x + 1} \Rightarrow \begin{cases} x \geq 1 \Rightarrow x^2 - 2x + 2 - x + 1 = x^2 - 3x + 3 = (x-1)(x-2) \\ x \leq 1 \Rightarrow x^2 + 2x + 0x - x + 1 = x^2 + x + 1 = x(x+1) \end{cases}$

$\{ \begin{matrix} x \geq 1 \Rightarrow x_1 = 1, 2 \\ x \leq 1 \Rightarrow x_2 = 0, -1 \end{matrix} \}$ $D_f, \mathbb{R} - \{0, 1, 2, -1\}$

الف)
$$y = \frac{x+5}{|2x+1| - |x+5|} \Rightarrow |2x+1| \neq |x+5|$$

$$2x+1 \neq x+5$$

$$x \neq 4$$

$\Rightarrow D_f, \mathbb{R} - \{4, -\frac{5}{2}\}$

ب)
$$y = \sqrt{|2x+1| - |x+5|}$$

$$|2x+1| - |x+5| \geq 0$$

$$|2x+1| \geq |x+5|$$

$$2x+1 \geq x+5$$

$$x \geq 4$$

$\Rightarrow D_f, \mathbb{R} - (-\frac{5}{2}, 4)$

الف)
$$y = \log_2(1 - \log_2 x) \rightarrow x > 0$$

$1 - \log_2 x > 0 \Rightarrow x < 2$ (II) $D_f, (0, 2)$

ب)
$$y = \log_2(1 - \log_2 \frac{x}{2}) \Rightarrow x > 0$$

$1 - \log_2 \frac{x}{2} > 0 \Rightarrow x > \frac{1}{2}$ (III) $D_f, (\frac{1}{2}, \infty)$

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

$$\log_{\frac{1}{4}} \log_{\omega}^{(x-1)} > 0 \Rightarrow \log_{\omega}^{(x-1)} > 1 \Rightarrow x > 2 \quad (II)$$

$$\log_{\frac{1}{4}} \log_{\omega}^{(x-1)} > 1 \Rightarrow \log_{\omega}^{(x-1)} \leq 1$$

$$x-1 \leq \omega \quad (I) \wedge (II) \wedge (III) \Rightarrow x \leq 2 \quad (III)$$

$$D_f = (1, 2]$$

$$(الف) y = \log^{(\cos x + 1)}$$

$$\Rightarrow (\cos x + 1) > 0$$

$$\cos x > -\frac{1}{2}$$

$$(ب) \sqrt{\log \frac{x-1}{x+1}} \Rightarrow x+1 \neq 0 \Rightarrow x \neq -1 \quad (I)$$

$$\frac{x-1}{x+1} > 0 \Rightarrow \frac{-1}{x+1} > 0 \Rightarrow x < -1 \quad (II)$$

$$\log \frac{x-1}{x+1} > 0 \Rightarrow \frac{x-1}{x+1} > 1 \Rightarrow \frac{-x}{x+1} > 0 \Rightarrow x < -1 \quad (III)$$

$$D_f = (I) \wedge (II) \wedge (III) = (-\infty, -1)$$

معادله، 1 ریشه داشته
مقریب x^2

$$x + c > 0$$

$$x < -c \Rightarrow \sqrt{-cx + b}$$

$$f(x) \xrightarrow{x \rightarrow c} \sqrt{-4 + b} = 0 \Rightarrow b = 4 \quad \checkmark$$

$$\Delta \leq 0 \Rightarrow b^2 - 4ac \leq 0$$

$$em^2 - \xi \leq 0$$

$$em^2 \leq \xi$$

$$m^2 \leq 1$$

$$-1 \leq m \leq 1 \quad \checkmark \quad \rightarrow 1 - (-1) = 2 \quad \checkmark$$

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

$$\xi - x^2 \geq 0$$

$$\xi \geq x^2$$

$$-x \leq x \leq x$$

نقطه دارای اعداد صحیح
برابر 1 است

$$D_f = \{-1, 0, 1\} \quad \checkmark$$