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$$y = \frac{x+3}{x^3+x^2-x+3} = \frac{x+3}{(x-1)(x^2+1)(x+3)} \Rightarrow D_f = \mathbb{R} - \left\{1, \frac{1}{2}, -3\right\} \checkmark$$

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$$y = \frac{x+3}{x^3+9x^2+14x+3} = \frac{x+3}{(x+1)(x+3)(x+3)} \Rightarrow D_f = \mathbb{R} - \left\{-1, -\frac{1}{2}, -3\right\} \checkmark$$

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

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$$y = \sqrt{\frac{x+3}{x^2-2x^2+2x-1}} \quad \frac{-3}{+\infty} - \frac{1}{\frac{1}{2}+} \quad \mathbb{R} - [-3, 1] \checkmark$$

$$y = \frac{2}{x^2-0|x-1|-2x+5}$$

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$$x > 1 \rightarrow x^2 - 2x + 5 - 2x + 0 = x^2 - 4x + 5 = 0 \Rightarrow x = 1, 4$$

$$D_f = \mathbb{R} - \left\{0, \frac{1}{2}, 4\right\}$$

$$x < 1 \rightarrow x^2 + 2x = 0 \Rightarrow x(x+2) = 0 \Rightarrow x = 0, -2$$

$$y = \frac{x+5}{|2x+1| - |x+3|} \Rightarrow |2x+1| \neq |x+3| \quad \{x^2 + 5x + 1 \neq x^2 + 4x + 9\}$$

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$$2x^2 - 2x - 8 \neq 0$$

$$x \neq -\frac{5}{2} \text{ و } 2 \quad D_f = \mathbb{R} - \left\{-\frac{5}{2}, 2\right\} \checkmark$$

$$y = \sqrt{|2x+1| - |x+3|} \Rightarrow \frac{-\frac{5}{2}}{+1} - \frac{2}{1+} \quad D_f = \mathbb{R} - \left(-\frac{5}{2}, 2\right) \checkmark$$

$$y = \log_{\frac{1}{2}}(1 - \log_{\frac{1}{2}} x)$$

$$\begin{aligned} & \textcircled{x > 0} \quad \textcircled{x < 3} \quad \textcircled{0 < x < 3} \checkmark \\ & 1 - \log_{\frac{1}{2}} x > 0 \quad \log_{\frac{1}{2}} x < 1 \end{aligned}$$

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$$y = \log_{\frac{1}{2}}(1 - \log_{\frac{1}{2}} x)$$

$$1 - \log_{\frac{1}{2}} x > 0 \Rightarrow \log_{\frac{1}{2}} x < 1$$

$$\textcircled{x > \frac{1}{2}} \quad \textcircled{x > \frac{1}{2}} \checkmark$$

$$x-1 > 0 \quad x > \frac{1}{e}$$

$$\log_2^{x-1} > 0 \quad x-1 > 0 \quad x > 1 \quad 1 < x \leq e$$

$$\log_{\frac{1}{2}}^{\log_2^{x-1}} \geq 0 \quad \log_2^{x-1} \leq 1 \quad x-1 \leq 0 \quad x \leq e$$

$$x(0 \leq x+1) > 0 \Rightarrow \mathbb{R} \setminus \left(\frac{1}{e} x - \frac{1}{e}, \frac{1}{e} x + \frac{1}{e} \right) = D_f$$

$\text{C.S.} > -\frac{1}{e}$

$$y = \sqrt{\log \frac{x-1}{x+1}} > 0 \quad \frac{x-1}{x+1} \geq 1 \rightarrow x \leq -1$$

$$\frac{-1}{+1-1} \quad \mathbb{R} - [-1, 1] = D_f \quad \rightarrow D = (-\infty, -1)$$

$$f(x) = \sqrt{(x+1)x + ax + b}$$

$$\text{ضبط } a = -1$$

$$-1(1) + b = 0 \Rightarrow b = 1 \quad \checkmark$$

$$f(x) = \sqrt{x^2 + 2x + 1 - m^2}$$

$$\Delta \leq 0$$

$$\Delta = (-2)^2 - 4(1-m^2) \leq 0$$

$$4m^2 \leq 4$$

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

$$1 - (-1) = 2 \quad \checkmark$$

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

$$[x] + [-x] + 1 \rightarrow x \in \mathbb{Z} = \mathbb{I} \quad I \cap \mathbb{I} = [-2, 2]$$

$$x \in \mathbb{D} \quad -2, -1, 0, 1, 2 \quad \checkmark$$