

$$a=r \rightarrow r(a+b) > 0 \rightarrow r > \frac{-b}{r} \rightarrow -\frac{b}{r} \cdot r \rightarrow b < -4$$

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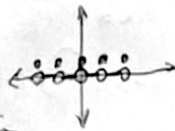
$$D_f = \mathbb{R} \rightarrow \Delta < 0 \rightarrow f - f(r-m^2) < 0 \rightarrow 1 - r + m^2 < 0 \rightarrow m^2 < 1 \rightarrow -1 < m < 1$$

$1 - (-1) = 2$

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$$[n] + [-n] + 1 \neq 0 \rightarrow$$

$$\begin{cases} 1 & x \in \mathbb{Z} \\ 0 & x \notin \mathbb{Z} \end{cases} \Rightarrow x \in \mathbb{Z} / \mathbb{I}$$



$$[I] \cap [II] \Rightarrow D_f = \{x | x \in \mathbb{Z}, -2 \leq x \leq 2\}$$

$$\sqrt{f-x^2} \rightarrow f-x^2 > 0 \rightarrow f > x^2 \rightarrow -2 \leq x \leq 2 \quad II$$

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$$y = \sqrt{x^2 + 2x^2} \rightarrow x^2 + 2x^2 > 0 \rightarrow x^2(x+2) > 0 \rightarrow \begin{matrix} -2 & 0 & 2 \\ - & + & + \end{matrix} \quad D_y = [-2, +\infty)$$

$$g = \sqrt{\frac{(x^2-1)(x^2-2x^2)}{x^2-1}} \rightarrow \begin{matrix} (x^2-1) & (x^2-2x^2) \\ \downarrow & \downarrow \\ x^2 \neq 1 & x^2 \neq 2 \end{matrix} \rightarrow \begin{matrix} -1 & 1 & \sqrt{2} \\ - & + & - \end{matrix}$$

$D_y = [-1, 1) \cup [\sqrt{2}, +\infty)$

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$$y = \sqrt{|x-2| - 3} \rightarrow |x-2| > 3 \rightarrow \begin{cases} x-2 > 3 \rightarrow x > 5 \\ x-2 < -3 \rightarrow x < -1 \end{cases} \quad D_y = (-\infty, -1] \cup [5, +\infty)$$

$$f(x) = \sqrt{5-|x-2|}$$

$$5-|x-2| > 0 \rightarrow |x-2| < 5 \rightarrow -5 < x-2 < 5 \rightarrow -3 < x < 7 \rightarrow D_f = [-3, 7]$$

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$$a) |x| \geq 0 \rightarrow x \leq 1 \rightarrow \begin{cases} x > 0 \rightarrow 1 > x \rightarrow 1 \leq x \leq 1 \rightarrow x \leq 1 \text{ (I)} \\ x < 0 \rightarrow \text{II} \end{cases} \xrightarrow{\text{I} \cap \text{II}} D_f = (-\infty, 1]$$

$$b) \begin{cases} \sqrt{1-x} > 0 \rightarrow 1-x \leq 1 \rightarrow -x \leq 0 \rightarrow x \geq 0 \rightarrow 0 \leq x \leq 1 \text{ (I)} \\ \sqrt{1-x} - 1 \neq 0 \rightarrow \sqrt{1-x} \neq 1 \rightarrow 1-x \neq 1 \rightarrow x \neq 0 \rightarrow x \neq 0 \text{ (II)} \end{cases} \xrightarrow{\text{I} \cap \text{II}} D_f = [0, 1] - \{0\}$$

$$y = \frac{\sin x - 1}{\cos x} \rightarrow \cos x \neq 0 \quad D_g = \mathbb{R} - \{k\pi + \frac{\pi}{2}\}$$


$$f(x) = \frac{\cos x}{\cos x - 1} \rightarrow \cos x - 1 \neq 0 \rightarrow \cos x \neq 1 \quad D_f = \mathbb{R} - \{2k\pi\}$$



$$|x_{n+1}| - |x_n| \neq 0 \rightarrow |x_{n+1}| = |x_n| \rightarrow (x_{n+1})^2 = (x_n)^2 \rightarrow x_{n+1}^2 - x_n^2 = 0 \rightarrow (x_{n+1} - x_n)(x_{n+1} + x_n) = 0 \rightarrow x_{n+1} - x_n = 0 \rightarrow x_{n+1} = x_n \rightarrow x = \frac{1 \pm 1}{2} \rightarrow x = 1 \text{ (I)}$$

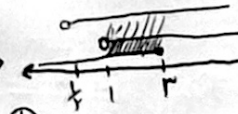
$$\Delta = f'(x)(x) = 1 \rightarrow x = 1 \text{ (II)}$$

$$D_f = \mathbb{R} - \{1, -1\}$$

$$|x_{n+1}| - |x_n| > 0 \rightarrow (x_{n+1})^2 > (x_n)^2 \rightarrow x_{n+1}^2 - x_n^2 > 0 \rightarrow (x_{n+1} - x_n)(x_{n+1} + x_n) > 0 \rightarrow x_{n+1} - x_n > 0 \rightarrow x_{n+1} > x_n \rightarrow x = \frac{1 \pm 1}{2} \rightarrow x = 1 \text{ (I)}$$

$$\Delta = f'(x)(x) = 1 \rightarrow x = 1 \text{ (II)}$$

$$D_f = (-\infty, -1) \cup [1, +\infty)$$

$$\begin{cases} \log_{\frac{1}{2}} \log_{\frac{1}{2}}^{(x-1)} \geq 0 \rightarrow \log_{\frac{1}{2}}^{(x-1)} \leq 1 \rightarrow x-1 \leq 0 \rightarrow x \leq 1 \text{ (I)} \\ \log_{\frac{1}{2}}^{(x-1)} > 0 \rightarrow x-1 > 1 \rightarrow x > 2 \text{ (II)} \\ x-1 > 0 \rightarrow x > 1 \text{ (III)} \end{cases} \xrightarrow{\text{I} \cap \text{II} \cap \text{III}} D_f = (1, 2]$$


$$\begin{cases} \log_{\frac{1}{2}} \frac{x-1}{x+1} \geq 0 \rightarrow \frac{x-1}{x+1} \geq 1 \rightarrow \frac{x-1}{x+1} - 1 \geq 0 \rightarrow \frac{x-1-x-1}{x+1} \geq 0 \rightarrow \frac{-2}{x+1} \geq 0 \rightarrow x+1 \leq -2 \rightarrow x \leq -3 \text{ (I)} \\ \frac{x-1}{x+1} > 0 \rightarrow \frac{x-1}{x+1} > 0 \rightarrow x-1 > 0 \rightarrow x > 1 \text{ (II)} \end{cases} \xrightarrow{\text{I} \cap \text{II}} D_f = (-\infty, -3] \cup (1, +\infty)$$

