

(c) $y = \sqrt{x^2-1} + \sqrt{x-2}$

$$\begin{aligned}
 x^2-1 \geq 0 &\rightarrow x \geq 1 \Rightarrow \begin{cases} x \geq 1 \\ x \geq -1 \end{cases} \\
 x-2 \geq 0 &\rightarrow x \geq 2
 \end{aligned}$$

$\xrightarrow{n} D_f = [2, \infty)$

$$\text{b) } y = \frac{\sqrt{4-x}}{\sqrt{4-x}} \quad \begin{cases} 4-x \geq 0 \Rightarrow x \leq 4 \\ 4-x > 0 \Rightarrow x < 4 \end{cases} \xrightarrow{\cap} (1, 4]$$

$$y = \sqrt{4x-a} + \sqrt{b-3x} \quad Df = \{x\} \quad \frac{b}{a} = ?$$

$$\begin{cases} 4x - 0.70 \Rightarrow x \geq \frac{a}{4} \\ b - 7x \geq 0 \Rightarrow x \leq \frac{b}{7} \end{cases} \Rightarrow D_f = \left[\frac{a}{4}, \frac{b}{7} \right] = \{r\} \begin{cases} \frac{a}{4} = r \Rightarrow a = 4r \\ \frac{b}{7} = r \Rightarrow b = 7r \end{cases} \Rightarrow \frac{b}{a} = \frac{7}{4} = \boxed{\frac{7}{4}}$$

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$$\begin{aligned}
 \text{ii) } y &= \sqrt{\frac{x^2 - x - 4}{x^2 - 11x^2 + 4}} \Rightarrow \begin{cases} (x-2)(x+2) \geq 0 \\ (x^2 - 1)(x^2 - 4) > 0 \Rightarrow (x-1)(x+1)(x-2)(x+2) > 0 \end{cases} \\
 &\quad \begin{array}{c} -2 \quad + \quad -2 \quad + \\ + \frac{+}{-} - \frac{-}{+} \frac{+}{-} + \end{array} \\
 \text{iii) } y &= \sqrt{\frac{x^2 - 2x^2 - 2x + 4}{x^2 + 2x^2 - 2x - 4}} \Rightarrow \begin{cases} (x-1)(x-2)(x+2) \geq 0 \\ (x+1)(x+2)(x-2) > 0 \end{cases} \\
 &\quad \begin{array}{c} -2 \quad -2 \quad -1 \quad +2 \\ + \frac{+}{-} - \frac{-}{+} \frac{+}{-} + \end{array} \\
 \end{aligned}$$

$y = \sqrt{r[x] - t} \Rightarrow r[x] - t \geq 0 \Rightarrow r[x] \geq t \Rightarrow [x] \geq t \rightarrow \text{DP}_2[t, \infty)$

Ex: $y = \sqrt{x-2} \Rightarrow x-2 \geq 0 \Rightarrow x \geq 2 \Rightarrow x \in [2, \infty) \rightarrow D_f = [2, \infty)$

$$y \cdot \sqrt{\frac{x+1}{|x-1|}} + \sqrt{\frac{4}{x^2+2x+2}} \Rightarrow \begin{cases} \frac{x+1}{|x-1|} \geq 0 \Rightarrow \begin{cases} x+1 \geq 0 \Rightarrow x \geq -1 \\ |x-1| \geq 0 \Rightarrow x \neq 1 \end{cases} \\ \frac{4}{x^2+2x+2} \geq 0 \Rightarrow \begin{cases} 4-x \geq 0 \Rightarrow x \leq 4 \\ (x+1)^2 + 1 \geq 0 \end{cases} \end{cases} \Rightarrow D_{f_2} = [-1, 4) \cup (1, 4]$$

$$\text{---)} y = \sqrt{[x]-4} + \sqrt{4-[x]} \Rightarrow \begin{cases} [x]-4 \geq 0 \Rightarrow [x] \geq 4 \Rightarrow [4, \infty) \\ 4-[x] \geq 0 \Rightarrow [x] \leq 4 \Rightarrow (-\infty, 4) \end{cases} \Rightarrow \emptyset$$