

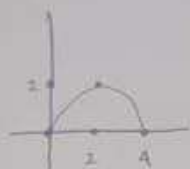
Nama: Prames Ray Lapon

NPM: 140810210009

1.  $f(x) = \sqrt{4x - x^2}$

$$\begin{aligned} D_f &= \{x \in \mathbb{R} \mid f(x) \in \mathbb{R}\} \\ &= \{x \in \mathbb{R} \mid \sqrt{4x - x^2} \in \mathbb{R}\} \\ &= \{x \in \mathbb{R} \mid 0 \leq x \leq 4\} \\ &= [0, 4] \end{aligned}$$

$$\begin{aligned} R_f &= \{f(x) \in \mathbb{R} \mid x \in (0, 4)\} \\ &= \{\sqrt{4x - x^2} \in \mathbb{R} \mid 0 \leq x \leq 4\} \\ &= \{y \in \mathbb{R} \mid 0 \leq y \leq 2\} \\ &= [0, 2] \end{aligned}$$



2.  $f(x) = \frac{x-1}{x+3}$

$$\begin{aligned} D_f &= \{x \in \mathbb{R} \mid f(x) \in \mathbb{R}\} \\ &= \{x \in \mathbb{R} \mid \frac{x-1}{x+3} \in \mathbb{R}\} \\ &= \{x \in \mathbb{R} \mid x < -3 \text{ atau } x > -3\} \\ &= (-\infty, -3) \cup (-3, \infty) \end{aligned}$$

$$\begin{aligned} R_f &= \{f(x) \in \mathbb{R} \mid x \in (-\infty, -3) \cup (-3, \infty)\} \\ &= \{\frac{x-1}{x+3} \in \mathbb{R} \mid x < -3 \text{ atau } x > -3\} \\ &= \{y \in \mathbb{R} \mid y < 1 \text{ atau } y > 1\} \\ &= (-\infty, 1) \cup (1, \infty) \end{aligned}$$

3.  $f(x) = \sqrt{x^2 - 4}$

$$\begin{aligned} D_f &= \{x \in \mathbb{R} \mid f(x) \in \mathbb{R}\} \\ &= \{x \in \mathbb{R} \mid \sqrt{x^2 - 4} \in \mathbb{R}\} \\ &= \{x \in \mathbb{R} \mid x \leq -2 \text{ atau } x \geq 2\} \end{aligned}$$

$$\begin{aligned} R_f &= \{f(x) \in \mathbb{R} \mid x \in (-\infty, -2) \cup (2, \infty)\} \\ &= \{\sqrt{x^2 - 4} \in \mathbb{R} \mid x \leq -2 \text{ atau } x \geq 2\} \\ &= \{y \in \mathbb{R} \mid y \geq 0\} \\ &= [0, \infty) \end{aligned}$$

4.  $f(x) = 1 - \sqrt{x - 4}$

$$\begin{aligned} D_f &= \{x \in \mathbb{R} \mid f(x) \in \mathbb{R}\} \\ &= \{x \in \mathbb{R} \mid 1 - \sqrt{x - 4} \in \mathbb{R}\} \\ &= \{x \in \mathbb{R} \mid x \geq 4\} \\ &= [4, \infty) \end{aligned}$$

$$\begin{aligned} R_f &= \{f(x) \in \mathbb{R} \mid x \in [4, \infty)\} \\ &= \{1 - \sqrt{x - 4} \in \mathbb{R} \mid x \geq 4\} \\ &= \{y \in \mathbb{R} \mid y \leq 1\} \\ &= (-\infty, 1] \end{aligned}$$

5.  $f(x) = \frac{1}{x^2}$

$$\begin{aligned} D_f &= \{x \in \mathbb{R} \mid f(x) \in \mathbb{R}\} \\ &= \{x \in \mathbb{R} \mid \frac{1}{x^2} \in \mathbb{R}\} \\ &= \{x \in \mathbb{R} \mid x < 0 \text{ atau } x > 0\} \\ &= (-\infty, 0) \cup (0, \infty) \end{aligned}$$

$$\begin{aligned} R_f &= \{\frac{1}{x^2} \in \mathbb{R} \mid x < 0 \text{ atau } x > 0\} \\ &= \{y \in \mathbb{R} \mid y > 0\} \\ &= (0, \infty) \end{aligned}$$