

Assignment:

Find the domain and range of the following functions

$$(i) f(x) = (x - 1)^3$$

$$(ii) f(x) = \frac{1}{x - 4}$$

$$(iii) f(x) = \frac{1}{x} - 1$$

Ans) i) Domain: $(-\infty, \infty), \{x|x \in \mathbb{R}\}$

Range: $(-\infty, \infty), \{y|y \in \mathbb{R}\}$

ii) Domain: $(-\infty, 4) \cup (4, \infty), \{x|x \neq 4\}$

Range: $(-\infty, 0) \cup (0, \infty), \{y|y \neq 0\}$

iii) Domain: $(-\infty, 0) \cup (0, \infty), \{x|x \neq 0\}$

Range: $(-\infty, -1) \cup (-1, \infty), \{y|y \neq -1\}$

Assignments:

Find the domain of the function

$$f(x) = \frac{x}{x^2 + 5x + 6}$$

Ans) Domain:

$$(-\infty, -3) \cup (-3, -2) \cup (-2, \infty), \\ \{x \mid x \neq -2, -3\}$$

Range:

$$(-\infty, 5 - 2\sqrt{6}] \cup [5 + 2\sqrt{6}, \infty), \\ \{y \mid y \leq 5 - 2\sqrt{6}, y \geq 5 + 2\sqrt{6}\}$$