Foundation

PARISHRAM 2025

Mathematics

DPP: 3

Relations and Functions

Q1 Complete set of domain of $f(x) = \frac{x-3}{(x^2-4)}$ is:

(A) $x \in (-2, 2) \cup (3, \infty)$
(B) $x \in (-\infty, -2) \cup (2, 3]$
(C) $x \in (-2, 2) \cup [3, \infty)$
(D) $x \in R - \{-2, 2\}$

Q2 The range of the function $f(x) = \frac{1}{2-\cos 3x}$ is

(A) $\left[\frac{-1}{3}, 0\right]$
(B) R
(C) $\left[\frac{1}{3}, 1\right]$
(D) None of these

Q3 The range of $f(x) = 2 + 2x - x^2$ is

(A) $(-\infty, \infty)$
(B) $(-\infty, 1)$
(C) $(-\infty, 3]$
(D) $(0, \infty)$

Q4 The range of the function $f(x) = \frac{1+x^2}{x^2}$ is equal to

(A) $(0, 1)$
(B) $[0, 1]$
(C) $(1, \infty)$
(D) $[1, \infty)$

Q5 Find the range of the real function $f(x) = \frac{x+1}{x-3}$

(A) $\mathrm{R} - \{3\}$
(B) $\mathrm{R} - \{1\}$
(C) R
(D) $\mathrm{R} - \{-3\}$

Q6 Find the domain of the following: $f(\mathrm{x}) = \frac{x^2+2x+1}{x^2-8x+12}$

Q7 Find the domain and range of the real valued function $f(\mathrm{x})$ given by $f(x) = \frac{4-x}{x-4}$

Q8 Find the domain and range of the function $f(x) = \frac{x^2-9}{x-3}$.

Q9 Find the domain and range of the function f defined by: $f(x) = \frac{1}{\sqrt{9-x^2}}$

Q10 If $f(x) = \frac{2x-3}{5-7x}$, then find domain and range of $f(x)$.

Answer Key

Q1 (D)

Q2 (C)

Q3 (C)

Q4 (C)

Q5 (B)

Q6 Domain = R – {2, 6}

Q7 $\text{Domain} = \mathbf{R} - \{4\}$
$\text{Range} = \{-1\}$

Q8 $\text{Domain} = \mathbf{R} - \{3\}$
$\text{Range} = \mathbf{R} - \{6\}$

Q9 Domain = $(-3, 3)$
Range = $\left[\frac{1}{3}, \infty\right)$

Q10 Domain = R – $\left\{\frac{5}{7}\right\}$
Range = R – $\left\{-\frac{2}{7}\right\}$