

Class XI- MATHEMATICS
Chapter-2 : RELATIONS and FUNCTIONS
Work sheet of Module 2/2

MCQ / One mark questions

- 1 The range of the real function $f(x) = |x|$ is
 A) $[0, \infty)$ B) $(0, \infty)$ C) \mathbb{R} D) $[-1, 1]$
- 2 If $f(x) = 4x - x^2$, $x \in \mathbb{R}$, then the value of $f(a+1) - f(a-1)$ is
 A) $4(a-2)$ B) $2(a+2)$ C) $4a$ D) $4(2-a)$
- 3 The domain of the function $f(x) = \sqrt{x-1} + \sqrt{3-x}$ is
 A) $[1, \infty)$ B) $(-\infty, 3]$ C) $(1, 3)$ D) $[1, 3]$
- 4 The range of the function $f(x) = \frac{x}{|x|}$ is
 A) $\mathbb{R} - \{0\}$ B) $\mathbb{R} - \{-1, 1\}$ C) $\{-1, 1\}$ D) $[0, 1]$
- 5 Which one of the following is not a function?
 A) $\{(x, y) : x, y \in \mathbb{R}, x^2 = y\}$ B) $\{(x, y) : x, y \in \mathbb{R}, y^2 = x\}$ C) $\{(x, y) : x, y \in \mathbb{R}, x = y^3\}$ D) $\{(x, y) : x, y \in \mathbb{R}, y = x^3\}$
- 6 If $f(x) = (x-a)^2 (x-b)^2$, then $f(a+b)$ is
 A) $4a^2 b^2$ B) $a^2 b^2$ C) $(a+b)^2$ D) $a^2 + b^2$
- 7 The value of $[3.8] + [-3.8]$ is
 A) 8 B) 0 C) 7 D) -1
- 8 The domain of the function $\frac{x^2+2x+3}{x^2-5x+6}$ is
 A) $\mathbb{R} - \{2, -3\}$ B) $\mathbb{R} - \{0\}$ C) $[0, \infty)$ D) $\mathbb{R} - \{2, 3\}$
- 9 Find the domain and range of the function $f(x) = \frac{x-2}{x-1}$.
- 10 What is the domain of the real valued function $f(x) = \frac{1}{x-2}$?

Two marks questions

- 11 Find the domain and range of the function $f(x) = \sqrt{16 - x^2}$
- 12 Let $A = \{9, 10, 11, 12, 13\}$ and let $f: A \rightarrow \mathbb{N}$ be defined by $f(n)$ = the highest prime factor of n . Find the range of f .
- 13 Let $f = \{(-1, -8), (1, -2), (2, 1), \dots\}$ be a function from \mathbb{Z} to \mathbb{Z} defined by $f(x) = px + q$, for some integers p and q . Determine p and q .
- 14 Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be given by $f(x) = x^2 + 3$
 Find (i) $\{x : f(x) = 28\}$ (ii) The pre-images of 39 and 2 under ' f '.
- 15 Determine the domain and the range of the relation R ,
 where $R = \{(x, x^3) : x \text{ is a prime number less than } 10\}$.
- 16 Find the domain and range of $f(x) = \frac{x-2}{x-1}$.

Four marks questions

- 17 Determine the domain and range of the function $f(x) = \{(x, \frac{1}{x}) : 0 < x < 6 : x \in \mathbb{N}\}$
- 18 Find the domain and the range of the real function f defined by $f(x) = \sqrt{2x-1}$.
- 19 Find the domain of the functions a) $f(x) = \underline{x^2+2x+1}$ b) $f(x) = x^2-8x+12$
- 20 Draw the graph of $f(x) = |x-2|$, $x \in \mathbb{R}$. What are the domain and range of $f(x) = |x-2|$?