



Twelfth Grade - Functions

1) Let $A = \{-2, -1, 0, 1, 2\}$ and if $f : A \rightarrow Z$ be given by $f(x) = x^2 - 2x - 3$. Find the range of f .

- $\{0, -5, -3, -4\}$
- $\{0, 5, -3, 4\}$
- $\{5, 0, -3, -4\}$
- $\{0, 5, 3, -4\}$

2) Consider the function $f(x) = x^2$. Let $A = \{-2, -1, 0, 1, 2\}$ under this rule $f(x) = x^2$ if we obtain $f(-2) = 5$, $f(-1) = 1$, $f(0) = 0$, $f(1) = 1$ then what could be the functions domain.

- $\{5, 1, 0, 1\}$
- $\{-2, -1, 0, 1, 2\}$
- None of these
- $\{3, 0, -2, 2\}$

3) Let $A = \{-2, -1, 0, 1, 2\}$ and if $f : A \rightarrow Z$ be given by $f(x) = x^2 - 2x - 3$. Find the pre image of 6

- -6
- 7
- No Pre image
- 3

4) Find the domain for which the function $f(x) = 2x^2 - 1$ and $g(x) = 1 - 3x$ are equal.

- $(-2, 1/2)$
- $(2, 1/2)$
- $(-2, -1/2)$
- $(-2, -1)$



5) Let $f : \mathbb{R} \rightarrow \mathbb{R}$ be a function given by $f(x) = x^2 + 1$. Find $f^{-1}(10)$

- ± 3
- No Pre image
- ± 5
- ± 4

6) Let $f = \{(1, 1), (2, 3), (0, -1), (-1, -3)\}$ be a function described by the formula $f(x) = ax + b$. Find a and b .

- $(2, -1)$
- $(-2, -1)$
- $(2, 0)$
- None of these

7) Find $f(-1)$ if a function $f : \mathbb{R} \rightarrow \mathbb{R}$ be defined by

$$f(x) = \begin{cases} 3x - 2, & x < 0 \\ 1, & x = 0 \\ 4x + 1, & x > 0 \end{cases}$$

- -5
- 9
- 8
- 7

8) If $f(x) = x^2 - 3x + 4$, then find the value of $f(2x + 1)$

- $-4x^2 - 2x - 2$
- $4x^2 - 2x + 2$
- $4x^2 - 2x - 2$
- $4x$



9) If $f(x) = (x - a)^2(x - b)^2$, find $f(a + b)$

- xab
- ab
- a^2b^2
- None of these

10) Find the domain for the function $f(x) = \sqrt{x - 2}$

- $[2, -5)$
- $(-2, ?]$
- $(0, 0)$
- $[2, ?)$

11) Find the domain for the function $f(x) = \sqrt{4 - x^2}$

- $(-2, ?)$
- $[2, ?)$
- $[2, -2)$
- $[-2, 2]$

12) Find the range of the function $f(x) = \frac{4 - x}{x - 4}$

- \emptyset
- 2
- x
- -1

13) Find the range of $f(x) = \frac{x - 2}{3 - x}$

- $\mathbb{R} \setminus \{1\}$
- $\mathbb{R} \setminus \{-1\}$
- $\mathbb{R} \setminus \{0\}$
- $\mathbb{R} \setminus \{2\}$



14) How many terms are there in GP 3, 6, 12,, 384?

- 3
- 30
- 8
- 35

15) Find the 9th term of the GP 2, 4, 8, 16

- 320
- 453
- 625
- 512

16) Mary buys a Chocolate box $A(P) = 50P^2 - 15p + 30$, each Chocolate in the Chocolate box worth $p = \$3$. Find the worth of the Chocolate box.

- 435
- 400
- 345
- 450

17) Kevin runs in a playground $P(t) = 40t^2 - 30t + 3$ meters. The time taken by him, $t = 2s$. Then find the total distance covered by Kevin.

- 100
- 102
- 98
- 105



18) In Cadbury city average consumption of Chocolate by a child for respective years are given. Find the rate of change?

Year	1980	1990	2000	2010
Consumption	720	870	1020	1170

- 15
- 14
- -15
- 25

19) For the function $f(x) = (x - 3)^2$. Find the average rate of change between the points at $x = 1$, $x = 3$

- 6
- 3
- 4
- -2

20) Let f be in subset of $Z \times Z$ defined by $f = \{(ab, (a + b)) : a, b \in Z\}$. Then f is a

- Complement Function
- Not a Function
- Function
- Composite Function

21) Find the range of f , if $f : R \rightarrow R$ be defined as

$$f(x) = \begin{cases} 1, & \text{if } x \in Q \\ -1, & \text{if } x \notin Q \end{cases}$$

- $[0, -1]$
- $[0, 1]$
- $[1, -1]$
- $[1, 1]$



22) Determine $\{x : f(x) = 1\}$, if $f : \mathbb{R} \rightarrow \mathbb{R}$ be such that $f(x) = 2^x$?

- 1
- 0
- x
- 4

23) The function f and g is defined as

$$f(x) = \begin{cases} x^2, & 0 \leq x \leq 3 \\ 3x, & 3 \leq x \leq 10 \end{cases}$$

$$g(x) = \begin{cases} x^2, & 0 \leq x \leq 2 \\ 3x, & 2 \leq x \leq 10 \end{cases}$$

- f is a function but g is not a function is a function
- f and g is a function
- f is a function
- g is a function

24) If $f(x) = x^2$, find $\frac{f(1.1) - f(1)}{(1.1) - 1}$

- 2.1
- 3.1
- 5.1
- 4.1

25) Find the domain of the function $f(x) = \sqrt{4-x} + \frac{1}{\sqrt{x^2-1}}$

- $(-1, 1) \cup (1, 4]$
- $(-1, -1) \cup (1, 4]$



- $(?, -1) \cup (1, 4]$
- $(-?, -1) \cup (-1, -4]$

26) Find the domain of the function $f(x) = (1/2 - \sin 3x)$

- Even numbers
- N
- Odd numbers
- R

27) Find $f(-3)$

$$f(x) = \begin{cases} x^2, & x < 0 \\ x, & 0 \leq x < 1 \\ 1/x, & x \geq 1 \end{cases}$$

- -4
- 4
- 3
- -3

28) Find the range of the function $f(x) = 3 / (2 - x^2)$

- $(-?, 0) \cup [-1, ?)$
- $(-?, 0) \cup [-1, -?)$
- $(-?, 0) \cup [1, ?)$
- $(?, 0) \cup [1, ?)$

29) Find the range of the function $f(x) = 3 / (2 - x^2)$

- $(-?, 0) \cup [-3/2, -?)$



- $(?, 0) ? [3/2, ?)$
- $(?, 0) ? [-3/2, ?)$
- $(-?, 0) ? [3/2, ?)$

30) Find the general term of the progression $1/4, -1/2, 1, -2$

- $(-1)^n (2)^{n-1}$
- $(-1)^{n-1} (2)^{n-1}$
- $(-1)^{n-1} (-2)^{n-1}$
- $(-1)^{n-1} (2)^{n-1}$