Twelfth Grade - Functions

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

- {0, 5, 3, -4}
- {5, 0, -3, -4}
- {0, 5, -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.

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

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

- -6
- No Pre image
- 3
- 7

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

- ± 4
- No Pre image
- ± 5
- ± 3

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.

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

7) Find $f(-1)$ if a function $f : R \to R$ be defined by

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

- 8
- -5
- 7
- 9

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

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

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

- None of these
- ab
- xab
- a²b²

10) Find the domain for the function f (x) = ?(x - 2)

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

11) Find the domain for the function f (x) = ?(4 - x²)

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

12) Find the range of the function f (x) = [(4 - x) / (x - 4)]

- x
- 2
- -1
- Ø

13) Find the range of f (x) = [(x - 2) / (3 - x)]

- R ? {1}
- R ? {0}
- R ? {2}
- R ? {-1}

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

- 35
- 3
- 8
- 30

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

- 453
- 625
- 320
- 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.

- 345
- 435
- 450
- 400

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.

- 105
- 98
- 100
- 102

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

- 14
- -15
- 25
- 15

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

- 4
- -2
- 3
- 6

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

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

21) Find the range of f, if f : R ? R be defined as

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

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

22) Determine {x : f(x) = 1}, if f : R ? R be such that f (x) = 2 ?

- 0
- x
- 1
- 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 and g is a function
- g is a function
- f is a function
- f is a function but g is not a function is a function

24) If f (x) = x², find [(f (1.1) - f (1)) / (1.1) - 1]

- 4.1
- 5.1
- 3.1
- 2.1

25) Find the domain of the function f (x) = ?(4 - x) + (1 / ?(x² - 1))

- (?, 1) ? (1, 4]
- (?, -1) ? (1, 4]

- (-?, -1) ? (-1, -4]
- (-?, -1) ? (1, 4]

26) Find the domain of the function f(x) = (1/2 - sin3x)

- Odd numbers
- N
- R
- Even numbers

27) Find f (-?(3))

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

- 3
- 4
- -3
- -4

28) Find the range of the function f(x) = 3 / (2 - x²)

- (? , 0) ? [1 , ?)
- (-?, 0) ? [-1, -?)
- (-?, 0) ? [1, ?)
- (-?, 0) ? [-1 , ?)

29) Find the range of the function f(x) = 3 / (2 - x²)

- (-?, 0) ? [-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)??³ (2)??³
- (-1)??³ (-2)??³
- (-1)? (2)??³
- (-1)??? (2)??³

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