## 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.

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

- No Pre image
- -6
- 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 , -1/2)
- (-2, 1/2)
- (2, 1/2)

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

- No Pre image
- ±5
- ±3
- ±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, 0)
- None of these
- (2, -1)
- (-2, -1)

7) Find f (-1) if a function f : R ? R be defined by

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

- 7
- -5
- 8
- 9

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

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

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

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

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

11) Find the domain for the function $f(x) = ?(4 - x^2)$

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

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

- -1
- 2
- x
- Ø

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

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

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

- 35
- 30
- 3
- 8

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

- 625
- 320
- 453
- 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
- 400
- 435
- 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.

- 105
- 98
- 102
- 100

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
- 25
- 15
- -15

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

- -2
- 4
- 6
- 3

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

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

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

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

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

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

- 1
- 0
- 4
- x

23) The function f and g is defined as

$$f(x)=\begin{Bmatrix} x^2, 0\le x\le 3 \\ 3x, 3\le x\le 10 \end{Bmatrix}$$

$$g(x)=\begin{Bmatrix} x^2, 0\le x\le 2 \\ 3x, 2\le x\le 10 \end{Bmatrix}$$

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

24) If f (x) = $x^2$, find [(f (1.1) - f (1)) / (1.1) - 1]

- 4.1
- 3.1
- 5.1
- 2.1

25) Find the domain of the function f (x) = ?(4 - x) + (1 / ?($x^2$ - 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)

- N
- Odd numbers
- Even numbers
- R

27) Find f (-?(3))

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

- -4
- 3
- -3
- 4

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

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

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

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