

1) if $f(x) = 5x^2$ and $g(x) = -x^2 + 2x$ then $(f \circ g)(x) =$

a) $-5x^4 + 10x^3$

b) $5x^3 + 10x^3$

c) $5x^4 + 10x^4$

d) none of the above

2) The numbers 2, 6, 10, 12, 16... form an arithmetic progression

a) True

b) false

3) Choose the most correct statement from the following:

a) The domain is subset of the codomain

b) The range is subset of the domain

c) The codomain is subset of the domain

d) The range is subset of the codomain

4) Let $A = \{1, 2, 3, 4\}$ and $B = \{p, q, r, s, t\}$, f from A to B

$f(1) = t, f(2) = s, f(3) = p$, is this function f

a) one to one

b) onto

c) bijection

d) none of the above

5) a function f from \mathbb{R} to \mathbb{R} (real numbers) $f(x) = x^2$ is not bijective because

- a) not one to one
- b) not surjective
- c) not onto
- d) all of the above

6) which properties from the following a function f from A to B must has

- a) each element in B is mapped to element in A
- b) The element in A is associated with only one element in B
- c) Two different element in A must be linked in different element in B
- d) all of the above

8) The formula for this arithmetic sequence 7, 11, 15, 19, 23, ...

a) $a_n = 7 \cdot 4^n$

b) $a_n = 7 + 4n$

c) $a_n = 7 + 4^n$

d) none of the above

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9) The formula for this Geometric Progression 1, -2, 4, -8, ... is

a) $a_n = -2^n$

b) $a_n = n^{-2}$

c) $a_n = n^2$

d) $a_n = 2^n$

10) What is the rule of the n^{th} term of an arithmetic sequence if $d=3$ and $a_7=15$

a) $6+3n$

b) $6-3n$

c) $-6+3n$

d) $7+3n$

11) The following function is invertible $f(x)=x^3$ in \mathbb{R} to \mathbb{R}

a) True

b) false

12) The following sequence is geometric sequence 3, 6, 12, 24

a) True

b) false

13) Consider the following map for f, f from $\{a, b, c, d\}$ to $\{1, 2, 3, 4\}$ with $f(a)=4, f(b)=2, f(c)=1$ which statement is correct

a) one to one only

b) onto only

c) bijection

d) f is not function

14) The function $f(x) = 2x + 3$ is a bijection in \mathbb{R} to \mathbb{R}

a) True

b) false

15) In an arithmetic sequence if $a_0 = 4$ and $a_3 = 13$ then the common difference $d = 3$

a) True

b) false

16) What is value of n_6 term of an arithmetic sequence if

You know that $d=3$ and $a_7=15$

a) 11

b) 12

c) 13

d) 14

17) Consider the following map for f , f from $\{a, b, c, d\}$ to

$\{1, 2, 3, 4\}$ with $f(a)=4$, $f(b)=2$, $f(c)=1$ what the Codomain

a) $\{a, b, c, d\}$

b) $\{1, 2, 3, 4\}$

c) $\{1, 2, 4\}$

d) none of the above

18) in arithmetic sequence if $a_0 = 4$ and $a_3 = 13$ then the common difference $d = 3$

a) True

b) false

19) if $f(x) = 2x + 3$ and $g(x) = x + 1$ what is the composition $f \circ g$

a) $2x + 3$

b) $2x + 4$

c) $2x + 5$

d) $x + 4$

20) for the following sequence from a subset of $\mathbb{Z}\{0, 1, 2, \dots\}$

4, 9, 14, 19, ..., find the formula

a) $4n$

b) $4n + 5$

c) $4 + 5n$

d) $n + 4$

21) if the function from $\{A, B, C, D\}$ to $\{a, b, c, d\}$ with $f(A)=b$
 $f(B)=c$, $f(C)=a$, $f(D)=b$ then f called:

a) none

b) one to one

c) Surjective

d) bijection

22) find a_5 in the sequence define by $a_n = 2a_{n-1} - a_{n-2}$ with $a_0 = 3$
and $a_1 = 4$

a) 8

b) 7

c) 6

d) 5

23) which function is bijection

a) $f(x) = x^2$ where $f: \mathbb{R} \rightarrow \mathbb{R}$ b) $f(x) = 2x + 1$ where $f: \mathbb{R} \rightarrow \mathbb{R}$

c) $f(x) = x^3$ where $f: \mathbb{Z} \rightarrow \mathbb{Z}$ d) $f(x) = 1/x$ where $f: \mathbb{R} \rightarrow \mathbb{R}$

24) which of following not Geometric Progression?

a) 3, 9, 27, 81

b) 1, 0.5, 0.25, 0.125

c) 5, 10, 15, 20

d) 1, -1, 1, -1

25) The sequence 1, 2, 4, 8, 16, ... is an example of an
arithmetic Progression ()
Geometric Progression

26) The domain of the function $f(x) = x^2/x-1$ is all real
numbers except $x=1$ ()

27) The sequence 1, -1, 1, -1, ... Geometric Progression
with Common ratio of -1 ()

28) The function $f(x) = x^3$ is not one to one because $f(1) = f(-1)$
()

29) The range of the function $f(x) = x^2$ for $x \in \mathbb{Z}$ includes
negative integers ()