Question 46 1 / 1

Find $\lim_{x \to \infty}\left(\frac{ln(1+\frac{(x+3)^3(2x+9)}{(4x^3+3)})}{x^3+3x^2+9x+27}\right)$

Hide answer choices

(A) 0

(B) 1

(C) Undefined

(D) -1/35

Question 47 1 / 1

Find $\lim_{n \to \infty}\sum_{a=0}^{n-1} \frac{sin(\frac{a}{n})}{n}$

Hide answer choices

(A) 1/a

(B) 1

(C) 1-cos(1)

(D) 0

Question 48 1 / 1

Find $\lim_{x \to 0}\left(\frac{ln(1+x^4)}{x}\right)$

Hide answer choices

(A) 1

(B) -1

(C) 0

(D) Undefined

Question 49 1 / 1

Find $lt_{x \to 0}\left(\frac{1}{\sin^2(x)}\right)$

Question 25

1 / 1

In the group G={1,3,7,9} under multiplication modulo 10, $(3 \times 7^{-1})^{-1}$ is equal to

Hide answer choices

A 9

B 5

C 7

D 3

Question 26

1 / 1

The order of $(-i)^2$ in the group $(C^*, \cdot)$ is

Hide answer choices

A 2

B 1

C 4

D 3

Question 27

1 / 1

Which one of the following is false

Hide answer choices

A (N,+) is a semi-group

B (N, ·) is a monoid

C (Z, ·) is a group

D The set of all even integers is a group under usual addition is a group

Question 28

1 / 1

If a, b, c are three elements of a group (G,*) and (a*b)* x = c then x=

Hide answer choices

A $c*(a^{-1}*b^{-1})$

B $c*(b^{-1}*a^{-1})$

C $(a^{-1}*b^{-1})*c$

Question pool Unit 2

Question 16

1 / 1

Let (G,*) be a group. If $a \in G$ be any element, then

Hide answer choices

A $O(a) = O(a^{-1})$

B $a = a^{-1}$

C $a * a^{-1} = a$

D $a * a^{-1} = a^{-1}$

Question 17

1 / 1

The number of generators of an infinite cyclic group is

Hide answer choices

A 1

B 2

C 3

D Infinite

Question 18

1 / 1

Every group of order 7 is

Hide answer choices

A Not abelian

B Not cyclic

C Cyclic

D None of these

Question 19

1 / 1

The total number of generators of a finite cyclic group of order 28 is

Hide answer choices

A 10

B 8

Question pool Unit 2

Question 19

1 / 1

The total number of generators of a finite cyclic group of order 28 is

Hide answer choices

(A) 10

(B) 8

(C) 12

(D) 14

Question 20

1 / 1

In the multiplicative group of 2 X 2 matrices of the form $\begin{bmatrix} a & a \\ a & a \end{bmatrix}$, $a \neq 0$ and $a \in R$ inverse of $\begin{bmatrix} 2 & 2 \\ 2 & 2 \end{bmatrix}$ is

Hide answer choices

(A) $\begin{bmatrix} 1/2 & 1/2 \\ 1/2 & 1/2 \end{bmatrix}$

(B) $\begin{bmatrix} 1/4 & 1/4 \\ 1/4 & 1/4 \end{bmatrix}$

(C) $\begin{bmatrix} 1/8 & 1/8 \\ 1/8 & 1/8 \end{bmatrix}$

(D) Does not exist

Question 21

1 / 1

Identify the false statement

Hide answer choices

(A) In a group of even order, there exists an element other than identity which is its own inverse.

(B) In an Abelian group $(ab)^2 = a^2b^2 \ \forall \ a,b \in G$

(C) Cube roots of unity form an Abelian group

(D) In $(G,*), ab = ac \Rightarrow b = c \forall a,b,c \in G$

Question 22

1 / 1

In the group $\{Z_6, +(mod\ 6)\}, 2 + 4^{-1} + 3^{-1}$ is equal to

Show answer choices

Question 37 1 / 1

Find $lt_{x\to -2}\frac{sin(\frac{1+(\frac{(x+2)^2(x^2+1)}{x^3+3})}{x+2})}{(x+2)}$

Hide answer choices

A ∞

B 0

C 2

D ∞

Question 38 1 / 1

Find $lt_{x\to 0}\frac{2cos(2x)+3cos(5x)-5cos(19x)}{cos(4x)-cos(3x)}$

Hide answer choices

A -76

B -6

C -7

D 0

Question 39 1 / 1

Find $lt_{p\to\infty}\frac{p^5.p!}{5.6...(5+p)}$

Hide answer choices

A 4!

B 5!

C 0

D ∞

Question 40 1 / 1

Question 7

1 / 1

A subset *H* of a group (G, *) is a group iff

Hide answer choices

(A) $a,b \in H \Rightarrow a*b \in H$

(B) $a \in H \Rightarrow a^{-1} \in H$

(C) $a,b \in H \Rightarrow a*b^{-1} \in H$

(D) *H* contains the identity elements

Question 8

1 / 1

In any group, the number of improper subgroups is

Hide answer choices

(A) 2

(B) 3

(C) Depends of the group

(D) 1

Question 9

1 / 1

In a group (G,*) for some a of G, $a^2 = e$ where e is the identity element. Then

Hide answer choices

(A) $a = \sqrt{e}$

(B) $a = a^{-1}$

(C) a=e

(D) None of these

Question 10

1 / 1

In the group G=[2,4,6,8] under multiplication modulo 10, the identity element is

Hide answer choices

(A) 6

(B) 8

Question 34

1 / 1

Let G denote the set of all n X n non-singular matrices with rational numbers as entries. Then under multiplication

Hide answer choices

(A) G is a subgroup

(B) G is a finite abelian group

(C) **G is an infinite, non-abelian group**

(D) G is infinite, abelian

Question 35

1 / 1

$Z_n = \{0,1,2.....,(n-1)\}$ fails to be a group under multiplication modulo n because

Hide answer choices

(A) Closure property fails

(B) Closure holds but not associativity

(C) There is no identity

(D) **There is no inverse for an element of the set**

Question 36

1 / 1

Find $lt_{x \to 0} \frac{2cos(2x)+3cos(5x)-5cos(19x)}{cos(4x)-cos(3x)}$

Hide answer choices

(A) 3/2

(B) 0

(C) 4/3

(D) -4/3

Question 37

1 / 1

Find $lt_{x \to -2} \frac{sin(\frac{1+(\frac{(x+2)^2(x^2+1)}{x^3+3})}{x+2})}{(x+2)}$

Question 28

1 / 1

If a, b, c are three elements of a group (G,*) and (a*b)* x = c then x=

Hide answer choices

(A) $c*(a^{-1}*b^{-1})$

(B) $c*(b^{-1}*a^{-1})$

(C) $(a^{-1}*b^{-1})*c$

(D) $(b^{-1}*a^{-1})*c$

Question 29

1 / 1

If a*b denote the bigger among a and b and a . b =(a*b)+3 then 4.7 is equal to

Hide answer choices

(A) 4

(B) 31

(C) 10

(D) 8

Question 30

1 / 1

Which of the following is true

Hide answer choices

(A) The set of all fourth roots of unity is a multiplicative group

(B) The set of all cube roots of unity is an additive group

(C) $(ab)^{-1} = a^{-1}b^{-1}$ for all a, b in any group G

(D) $(ab)^2 = a^2b^2$ for all a, b in any group G, then the group G is non-abelian

Question 31

1 / 1

The set of all integers multiples of 5 is a sub-group of

Hide answer choices

(A) The set of all rational numbers under multiplication

(B) The set of all integers under multiplication

Question 4

1 / 1

The set G={0,1,2,3,4,5} with the operation of addition modulo 6 is a group. Which of the following is a sub group of G

Hide answer choices

(A) {0, 3}

(B) {2, 4}

(C) {1, 3}

(D) {2, 3}

Question 5

1 / 1

In the group of non-zero rational numbers under the binary operation * given by $a*b=\frac{ab}{5}$ the identity element and the inverse of 8 are respectively

Hide answer choices

(A) 5 and 5/8

(B) 5 and 25/8

(C) 5 and 8/25

(D) None of these

Question 6

1 / 1

If every element of a group *G* is its own inverse, then *G* is

Hide answer choices

(A) Finite

(B) Infinite

(C) Cyclic

(D) Abelian

Question 7

1 / 1

A subset *H* of a group (G, *) is a group iff

Hide answer choices

(A) $a,b\in H\Rightarrow a*b\in H$

(B) $a\in H\Rightarrow a^{-1}\in H$

Question 22

1 / 1

In the group $\{Z_6, +(mod\ 6)\}, 2+4^{-1}+3^{-1}$ is equal to

Hide answer choices

(A) 2

(B) 1

(C) 4

(D) 3

Question 23

1 / 1

The set of all 2 X 2 matrices over the real numbers is not a group under matrix multiplication because

Hide answer choices

(A) Associative law is not satisfied

(B) Inverse axiom is not satisfied

(C) Closure property is not satisfied

(D) Identity element does not exist

Question 24

1 / 1

The number of improper subgroups of $G=[1,-1,i,-i]$ $w.r.t$ multiplication is

Hide answer choices

(A) 2

(B) 3

(C) 4

(D) 1

Question 25

1 / 1

In the group G={1,3,7,9} under multiplication modulo 10, $(3\times 7^{-1})^{-1}$ is equal to

Hide answer choices

(A) 9

(B) 5

Question pool Unit 2

Question 43 1 / 1

Find $lt_{p\to\infty}\frac{p^{\frac{1}{2}}.p!}{\frac{1}{2}.\frac{3}{2}...(p+\frac{1}{2})}$

Hide answer choices

A $\sqrt{\pi}$

B ∞

C $\sqrt{\pi}$ /2

D 0

Question 44 1 / 1

Find $lt_{n\to\infty}(1+\frac{1}{n})^n$

Hide answer choices

A e

B e-1

C 0

D ∞

Question 45 1 / 1

Find $lt_{x\to\infty}(1+\frac{1}{x^2+2x+1})^{x^2+3x+1}$

Hide answer choices

A e

B 1

C e^2

D 1/e

Question 46 1 / 1

Question pool Unit 2

Assignment Content

Question 1 1 / 1

In the group $(Z, *)$ of all integers, where $a * b = a + b + 1$ for all $a, b \in Z$, the inverse of -2 is

Hide answer choices

(A) -2

(B) 0

(C) -4

(D) 2

Question 2 1 / 1

In the group $G = [0, 1, 2, 3, 4, 5]$ under addition modulo 6, the value of $(3 + 5^{-1})^{-1}$ is

Hide answer choices

(A) 5

(B) 4

(C) 2

(D) 3

Question 3 1 / 1

If G is a group of even order, then

Hide answer choices

(A) $a^2 = e$ for all $a \in g$

(B) $a^2 = e$ for atleast one $a \in g$

(C) $a^2 = a$ for all $a \in g$

(D) None of these

Question 4 1 / 1

The set $G=\{0,1,2,3,4,5\}$ with the operation of addition modulo 6 is a group. Which of the following is a sub group of G

Question 31

1 / 1

The set of all integers multiples of 5 is a sub-group of

Hide answer choices

(A) The set of all rational numbers under multiplication

(B) The set of all integers under multiplication

(C) The set of all non-zero rational numbers under multiplication

(D) The set of all integers under addition

Question 32

1 / 1

If Q_1 is the set of all rational numbers other than 1 with the binary operation *defined by a*b =a+b for all a, b in Q_1 then the identity in Q_1 w.r.t.* is

Hide answer choices

(A) 1

(B) 0

(C) -1

(D) 2

Question 33

1 / 1

In the group G={1,3,7,9} under multiplication modulo 10, the inverse of 7 is

Hide answer choices

(A) 7

(B) 3

(C) 9

(D) 1

Question 34

1 / 1

Let G denote the set of all n X n non-singular matrices with rational numbers as entries. Then under multiplication

Hide answer choices

(A) G is a subgroup

(B) G is a finite abelian group

(C) G is an infinite, non-abelian group

Question 13

1 / 1

The set $\begin{bmatrix} a & 0 \\ 0 & d \end{bmatrix}$ where $a,b \in R$ under matrix multiplication forms

Hide answer choices

A An abelian group

B Non-abelian group

C Cyclic group

D None of these

Question 14

1 / 1

In a group (G,*) the equation x*a=b has a

Hide answer choices

A Unique solution $b*a^{-1}$

B Unique solution $a^{-1}*b$

C Unique solution $a^{-1}*b^{-1}$

D Many solution

Question 15

1 / 1

If in a group G, if $a^2 = e$ for all $a \in G$ then

Hide answer choices

A G is abelian

B G is not abelian

C O(G)=2 only

D None of these

Question 16

1 / 1

Let (G,*) be a group. If $a \in G$ be any element, then

Hide answer choices

A $O(a) = O(a^{-1})$

Question 10

1 / 1

In the group G=[2,4,6,8] under multiplication modulo 10, the identity element is

Hide answer choices

A 6

B 8

C 4

D 2

Question 11

1 / 1

The set of all non-zero real numbers with the operation * defined on it by $a*b=\frac{ab}{2}$ is an abelian group. The identity of the group is

Hide answer choices

A 1

B 2

C 1/2

D 1/3

Question 12

1 / 1

Square matrices of the type $\begin{bmatrix} x & x \\ x & x \end{bmatrix}$, $x \neq 0$ form a group under the usual matrix multiplication. The identity of the group is

Hide answer choices

A $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

B $\begin{bmatrix} 1/2 & -1/2 \\ -1/2 & 1/2 \end{bmatrix}$

C $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$

D $\begin{bmatrix} 1/3 & 1/3 \\ 1/3 & 1/3 \end{bmatrix}$

Question 13

1 / 1

The set $\begin{bmatrix} a & 0 \\ 0 & d \end{bmatrix}$ where $a,b \in R$ under matrix multiplication forms

Question pool Unit 2

Question 40

1 / 1

Find $= lt_{x \to 0} \frac{sin(x)}{tan(x)}$

Hide answer choices

A 0

B 1

C ∞

D 2

Question 41

1 / 1

Find $lt_{x \to 0} \frac{sin(x^2)}{x}$

Hide answer choices

A ∞

B -1

C 0

D 2^2

Question 42

1 / 1

Find $lt_{x \to -33} \frac{ln(x^3+68x^2+1222x+2179)-ln(x+1)}{(x^2+66x+1089)}$

Hide answer choices

A -33

B 1/2

C 0

D 31/32

Question 43

1 / 1

Find $lt_{p \to \infty} \frac{\frac{1}{p}^{2}.p!}{\frac{1}{2}.\frac{3}{2}...(p+\frac{1}{2})}$

Question 48 1 / 1

Find $\lim_{x \to 0}(\frac{ln(1+x^4)}{x})$

Hide answer choices

A 1

B -1

C 0

D Undefined

Question 49 1 / 1

Find $lt_{x \to 0}(\frac{1}{sin^2(x)})$

Hide answer choices

A 2

B 1

C 0

D undefined

Question 50 1 / 1

Find $lt_{x \to \infty}((\frac{x^3+x^2+x}{x^3+x+1})^{x+3})$

Hide answer choices

A e

B e^{-1}

C 0

D 1

Feedback

Feedback for student

Your instructor hasn't added feedback