MTH202 GRAND QUIZ

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Range of function /[f(x)=(e^x)/] is ___________

- **Set of positive real numbers**

Composite relation symbolically written as _______

- **SoR={(a,c)aeA, ceC, 3eB, (a,b)eR and (b,c)eS}**

If x=17(mod 5) which of the following integers are valid solution for x ?

- **12**

Range of the relation {(0,1),(3,22),(90,34)}

- **{1,22,34}**

Let A= {0,1,2} and R = {(0,2),(1,1),(2,0)} be a relation on A. The which of the following ordered pairs are needed to make it transitive?

- **(0,0) and (2,2)**

Operation of subtraction is a binary operation on the set of __________

- **Integers**

Let S=R and define the 'square' relation R= {(x,y)I$x^2=y^2$}. The square relation is an _________ relation

- **Equivalence relation**

The logic gate NOT is a uniary operation on {0,1}.

- **True**

Let A= {1,2}, then P(A)=__________

- {{},{1},{2},{1,2}}

If a relation R is reflexive, anti symmetric and transitive then which of the following is not true for the inverse relation.

- Inverse relation will be irreflexive.

Let R be a binary relation on a set A,R is anti-symmetric iff ___________

- a,beA if (a,b)eR and (b,a)eR then a=b

"-" is a binary operation on the set of integers Z.

- True

The inverse relation R^(-1) from B to A is defined as ____________

- R^(-1) = {(b,a) e B*A I (a,b)eR}

Which of the following is always true for the matrix representation of a symmetric relation?

- Matrix is equal to its transpose

Let A= {1,2,3,4} and let R and S be transitive binary relations on A defined as; R= {(1,2), (1,3), (2,2), (3,3), (4,2), (4,3) and S={(2,1), (2,4), (3,3)} then RuS= {(1,2), (1,3), (2,1), (2,2), (2,4), (3,3), (4,2), (4,3)}

- R union S is transitive

Let S=R and define the ' square' relation R = {(x,y)Ix^2=y^2}. The square is an _________ relation.

- Equivalance relation

If x=-10(mod 15). Which of the following integers are valid solution for x?

- 5

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Let R be a binary relation on a set A. If R is anti symmetric then ______________

- **Inverse of R is anti symmetric**

If A={1,2,3} is a set and R = {(1,2),(2,2),(2,1)} is a relation on A, R is

- **Symmetric**

Let A={0,1} and B=(1). Let R and S be two binary relations on Cartesian product of A and B such that R={(0,1)} and S= {(1,1)}. Then R intersection S=_________________

- **Empty**

A relation R is said to be ______ iff it is reflexive, antisymmetric and transitive.

- **Partial order Relation**

Let X={1,2,3} and Y={7,8,9} and let f be function defined from X to Y such that f is onto then which of the following statement about f is true?

- **Co-domain of f must contain 1 element**

The function fog and gof are always equal

- **False**

If a relation R={(1,2),(2,3),(3,4)(4,1)(2,2) is given then which of the following is true about this relation.

- **R is reflexive**

A set is called countable if , and only if, it is____________

- **finite**

Let f(x) = x^2-1 define function f from R to R and c=2 be any scalar, then c,f(x) is __________

- $2x^2+2$

The set Z of all integers is ___________

- Countable

Let R be a binary relation on a set A. If R is anti symmetric then _______

- Inverse of R is symmetric

For (2x-3, 4y+2) = (1,10). What will be the value of x and y ?

- (2,2)

Let f and g be the two functions from R to R defined by f(x) = IxI and g(x)= square root of x^2 for all xeR. Then______

- F(x) is not equal to g(x)

If a set A has 15 elements then P(A) (power set of A) has ___________ elements.

- 2^15

For the relation below to be a function, x cannot be what values {(12,14),(13,5),(-2,7),(x,13)}?

- X cannot be 12, 13, or -2

Let the set A = {1,2,3,4}. Then the relation {(2,4),(4,2)} is ____________

- Symmetric

For the following relation to be a function, x can not be what values? R={(2,4),(x,1), (4,2),(5,6)}.

- x cannot be 2,4 and 5

Vertical line test is used to determine that whether the graph of a relation is a function or not.

- True

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The properties of being symmetric and being anti symmetric are ______________

- **Not negative of each other**

The number of elements in AxB are _____________ if A is a set with '5' elements and B is a set with '4' elements.

- **20**

R={(a,1)(b,2)(c,3)(d,4)} then the inverse of this relation is _______________

- **{(1,a)(2,b)(3,c)(4,d)}**

Logic gate NOT does not define a binary operation on (0,1) because ______________

- **It takes a single input and gives a single output**

How many real numbers exist between 1 and 5

- **3**

The number pi is

- **Irrational**

The number square root 2 is

- **Irrational**

Range the relation {(0,1)(3,22),(90,34)}

- **{0,3,90}**

Supherical coordinate 0 is related to the cylindrical coordinate as_______________

- **@=@**

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Operation of subtraction is a binary operation on the set________

- **Integers**

Let A {1,2,3,4} and R={(1,2),(2,3),(3,3),(3,4)} be a relation on A. Then which one of the following ordered pair has made R not an irreflexive relation?

- **(3,3)**

Input values of the function are called the ____________

- **Domain**

Range of function f(x)=IxI will be

- **Set of positive real numbers**

Which of the following is not a binary operation on the set of integers?

- **Division**

In the matrix representation of an irreflexive relation all the entries in the main diagonal are __________

- **0**

If the partition set of A is {A_1,A_2} then

- **A_1nA_2= not empty set**

Let A= {a,b} then P(A) =

- **{Non empty set, {a},{b},{a,b}}**

Which relations below are not functions?

- **{(13,14),(13,5),(16,7),(18,13)}**

In the directed graph of an antisymmetric relation there is _________ pair of arrows between two distinct elements of the set.

- No

If a relation R= (1,1),(2,1)(2,2) is given then which of the following is not true about this relation

- R is irreflexive

Let R and S be transitive relations on a set A then ________________

- Neither R union S is transitive nor R intersection S is transitive

Let R={(1,2)(3,4)(5,6)(7,8)}. Domain of the inverse of the relation is _____________

- {2,4,6,8}

Let A={1,2,3,4,5} and B={4,9,,16,17,25}. Then the relation R={(2,4),(3,9),(4,16),93,17)} The inverse of R is'

- {(4,2),(9,3),(16,4),(17,3)}

Let R be a relation on a set A. If R is symmetric then its compliment is __________

- Irreflexive

Which is not a binary operation on the set of natural numbers N?

- Subtraction

If a relation R={(1,1)(2,1)(1,2)(2,2)} is given then which of the following is not true about this relation.

- R is irreflexive

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R={(a,1)(b,2)(c,3)(d,4)} then the inverse of this relation is _______________

- **{(1,a)(2,b)(3,c)(4,d)}**

For any set A, the Cartesian product of A and A is known as _____________

- **Universal relation**

Let A={p,q,r,s} and define a relation R on A by R={(p,p),(p,r),(q,r),(q,s),(r,s)} Then which one of the following is the correct statement about R:

- **R is not reflexive**

A={1,2} B={3,4}, R={(1,3)(2,4)}. Then the complement of R is ___________.

- **{(1,4)(2,3)}**

Domain of a relation symbolically written as_____________.

- **Dom(R)={aeAI(a,b)eR}**

Let X={2,4,5} and Y={1,2,4} and R be a relation from X to Y defined by R={(2,4)(4,1)(a,2)}. For what value of 'a' the relation R is a function?

- **5**

Let A={1,2,3,4,5,6,7,8,9}, then which of the following sets represent the partition of the set A?

- **A={1,3,5,7,9}, B={2,4,6}, C={8}**

Let A={1,2,3} and B={2,4} then number of binary relations from A to B are ______________.

- **64**

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A relation R is said to be ________iff it is reflexive, antisymmetric and transitivde.

- **Partial order Relation**

Let f be a function from X={2,4,5} to Y={1,2,4,6} defined as:f={(2,6),(4,2),(5,1)} . The range of f is _________

- **{1,2,6}**

Let A={0,1,2} and R={(0,2),(1,1),(2,0)} be a relation on A. Then which of the following statement about R is true?

- **R is symmetric**

Let A={2,3,4} and B={2,6,8} and let R be the "divides" relation from A to B i.e for all (a,b) belong to (Cartesian product of A and B), a,R b iff a I b (a divides b). Then

- **R={(2,2),(2,6),(2,8),(3,6),(4,8)}**

Let A={1,2,3,…,50} and B={2,4,6,8,10}. Then the Cartesian product of A and B has ___________ elements.

- **250**

In the matrix representation of an reflexive relation all the entries in the main diagonal are ____________

- **1**

Which of the following is not a type of a relation?

- **Permutation**

Let X={2,4,5} and Y={1,2,4} and R be a relation from X to Y defined by R={(2,4),(4,1),(a,2)}. For what value of 'a' the relation R is a function ?

- **5**

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Which of the following is not a representation of a relation?

- **Venn diagram**

Let A={1,2,3,4} and define the following relations on A. Then R={(1,3), (1,4),(2,3),(2,4),(3,1),(3,4)} is _________

- **R is irreflexive**

The range of f:X-> Y is also called the image of

- **True**

Complementary Relation symbolically written as _________

- **R=A*B- R={(a,b)eA*BI (a,b)not belong to R}**

Let A={1,2,3,4} and R=(1,1)(2,2),(3,3),(4,4) then R is

- **All options**

If a relation R={(1,1),(2,1),(1,2),(2,2)} is given then which of the following is not true about this relation.

- **R is irreflexive**

Which of the following logical connective is not a binary operation ?

- **Implication**

A set may be dividend up into its disjoint subsets, such division is called________

- **Partition**

If A=(1,2,3)&B=(4,5,6) and R ={(1,4)(2,5)(3,6)(3,4)} The complementary relation is _________

- **A*B(difference or -) R**

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In matrix representation of a__________ relation, the diagonal entries are always 1.

- **Reflexive**

R is not symmetric iff there are elements a and b in A such that ___________

- **(a,b) belongs to R but (b,a) does not belong to R**

Which relations below are functions?

R1={(3,4),(4,5),(6,7),(8,9)}

R2={(3,4),(4,5),(6,7),(3,9)}

R3={(-3,4),(4,-5),(0,0),(8,9)}

R4={(8,11),(34,5),(6,17),(8,19)}

- **R1 and R3 are functions**

The logic gate OR and AND are uniary operation on {0,1}

- **False**

There is atleast one loop in the graph of an irreflexive relation

- **False**

There is atleast one loop in the graph of an reflexive relation

- **True**

A contains 3 elements and B contains 2 elements, then number of subsets of A*B are _________

- **64**

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Let A={1,2,3} and B={0,1,2} and C={a,b} R={(1,0),(1,2),(3,1),(3,2)} S={(0,b),(1,a),(2,b)} composite of R and S=______________

- **{(1,b),(1,a),(3,a),(3,b)}**

If R is transitive then the inverse relation will be transitive

- **True**

The number of elements in the power set of P(not empty set) denoted by P(P(not empty set) is

- **2**

The function defined from Z to Z as f(x)= 1/(x+2)(x-2) is not well defined because __________

- **Function is not defined at x=2 and x=-2**

Rang of relation {(0,1),(3,22),(90,34)} is ___________

- **{1, 22, 34}**

The number of elements in the power set of P(not empty set) denoted by P(not empty set) is

- **1**

Let R={(1,2),(3,4),(5,6),(7,8)}. Domain of inverse of the relation is _________

- **{2,4,6,8}**

The relation 'divides' on the set of integers is _________

- **A symmetric relation**

Operation of subtraction is a binary operation on the set of__________

- **Integers**

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If R is transitive then the inverse relation will be transitive.

- **True**

Let A={1,2,3,4} and define the relation R on A by R={(1,2),(2,3),(3,3),(3,4)}. Then__________

- **R is both reflexive and irreflexive**

A set may be divided up into its disjoints subsets,such division is called

- **Partition**

If a set A contains is elements then the number of elements in its power set P(A) is ________

- **2^n**

Range of a relation symbolically written as _______.

- **Ran R = {b ∈ B I (a, b) ∈ R }**

Let R be a binary relation on a set A. IF R is anti symmetric then _________.

- **Inverse of R is anti symmetric**

Let A be a set with m elements and B be a set with n elements then the number of elements in A*B are _________

- **m.n**

Let A{1,2,3,4} and define the following relation on A. Then R={(1,3),(2,2),(2,4),(3,1),(4,2)} Is __________

- **R is symmetric**

If A={1,2,3}& B={4,5,6} and R={1,4},{2,5},{3,6},{3,4}. The complementary relation is ________

- **A*B (difference or -) R**

Let R be a relation on a set A. If R is reflexive then its compliment is __________

- **Irreflexive**

25=1(mod 3) means that 3 divides _______

- **25-1**

Let R be the universal relation on a set A then which one of the following statement about R is true ?

- **R is reflexive, symmetric and transitive**

Domain of a relation symbolically written as ______

- **Dom(R)= {aeR I (a,b) e R}**

Let R be a relation on a set A. R is transitive if and only if for all a,b,ceA then

- **(a,b)eR and (b,c)eR then (a,c)eR**

Let A be a non-empty set and P(A) the power set of A Deifne the ' subset' relation ,c as follows for all X,Y e P(A), XcY <-> for all x, iff xeX then xeY . Then c is _________

- **c is partial order relation**

Define a relation R={(1,1),(2,2),(3,3),(1,3) the relation is

- **R is reflexive and transitive**

Let R be a relation on a set A. R is transitive if and only if for all a,b,ceA then.

- **(a,b)eR and (b,c)eR then (a,c)eR**

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Let R and S be reflexive relations on a set A then R intersection S is reflexive

- **True**

A function whose range consists of only one element is called________

- **One to one function**

The set Z of all integers is ___________

- **Countable**

One-to-one correspondence means the condition of _______

- **Both (a) and (c)**

Let X={1,5,9} and Y={3,4,7}, Define a function f from X to Y such that f(1)=7,f(5)=3,f(9)=_________. Which is true f(9) to make it a one-to-one (injective) function?

- **4**

What will be the fourth term of the following sequence 1/2,2/3,3/4 ______?

- **4/5**

The value of 6!=

- **720**

A constant function is one to one iff its ________ is a singleton.

- **Domain**

A constant function is onto iff its ___________ is a singleton.

- **Co-domain**

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Number of one to one functions from X={a,b} to Y={u,v} are equal to ______-

- **2**

If f is defined recursively by f(0) = -1 and f(n+1)=f(n)+3, then f(2)=_________.

- **5**

A function whose inverse function exists is called a/an__________

- **Invertible function**

Let f(2)=3, g(2)=3, f(4)=1 and g(4)=2 then the value of fog(4) is……

- **3**

Let A={1,2,3,4} and B={7} then the constant function from A to B is ________.

- **Onto**

Composition of a function is a commutative operation.

- **False**

Composition of a function is not a commutative operation

- **True**

The sum of first five whole number is __________.

- **10**

If f and g are two one-to-one functions, then their composition that is gof is one-to-one.

- **True**

Inverse of a surjective function is always a function.

- **False**

Inverse of a surjective function may not be a function

- **True**

Let X={1,2,3,4} and Y={7,8,9} and let f be function defined from X to Y such that f is onto then which of the following statement about f is true?

- **Co-domain of f must contain 3 elements**

If f; X->Y and g; Y->Z are both onto functions. Then gof; X->Z is _________

- **onto**

If f and g are two one-to-one functions, then their composition gof is_________

- **One-to-one**

If f: W →X, g:X →Y, and h:Y →Z are functions, then___________

- **(hog)of = ho(gof)**

Cardinality of positive prime numbers less than 20 is __________.

- **8**

IF f(x)=sin^{-1}(x) and g(x)=sin x then gof(x) is _________.

- **X**

0!=_________.

- **1**

An important data type in computer programming consists of __________.

- **Finite sequences**

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Let f(x)=2x and g(x)=x+2 define functions f and g from R to R, then (f-g)(x) is __________.

- **x-2**

The total number of terms in an arithmetic series 0+5+10+15+….50 are _________.

- **11**

9!/6!=________

- **504**

Let f(x)=3x and g(x)=3x-2 define functions f and g from R to R, THEN (F+G)(X) is ___________

- **6x-2**

If f is a bijective function then ($f^{-1}f(x)$) is equal to

- **X**

A sequence whose terms alternate in sign is called an_________

- **Alternating sequence**

Common ration in the sequence "4, 16, 64, 256,…" is…..12.

- **4**

0.8181818181 is a infinite geometric series.

- **True**

The word 'algorithm' refers to a step-by-step method for performing some action.

- **True**

A predicate become ______ when its variables are given specific values

- **Sentence**

The sum of two irrational numbers must be an irrational number.

- **False**

The sum of two irrational numbers need not be irrational number

- **True**

The division by zero is allowed in mathematics.

- **Fasle**

The product of any two consecutive positive integers is divisible by 2

- **True**

If ‘n’ is an odd integer then n^3+n is ________.

- **Even**

For integers a,b,c, If divides b and a divides c, then a divides (a+b).

- **False**

Quotient remainder theorem states that for any positive integer d, there exist unique integer q and r such that ________ and 0<r<d

- **N=d.q+r**

A rule that assigns a numerical value to each outcome in a simple space is called

- **Random variable**

If A and B are two disjoint (mutually exclusive) events then P(AB)=

- **P(A) + P(B)**

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How many ways are there to select five players from a 10 member tennis team to make a trip to a match to another school?

- **C(10,5)**

The expectation of x is equal to

- **Sum xf(x)**

If P(A intersection B) = P(A) P(B) THEN THE events A and B are called

- **Independent**

A walk that starts and ends at the same vertex is called.

- **None optins**

How many integers from 1 through 1000 are neither multiple of 3 nor multiple of 5

- **497**

What is the probability of getting a number greater than 4 when a die is thrown?

- **3/5**

Eater formula for graphs is___________.

- **F=e-v+2**

X+a,x+3a,x+5a…..is an____________

- **Arithmetic sequence**

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Composition of a function is a commutative operation.

- **False**

Real valued function is a function that assigns _____ to each member of its domain.

- **Only a real number**

Let X={1,2,3,4} and a function 'f' defined on X f(1)=1,f(2)=2,f(3)=3,f(4)=4 then ________

- **F is an identity function**

A constant function is surjective if and only if ____________

- **The co-domain consists of a single element**

Cardinality means the total number of elements in a set.

- **True**

If f(x)=2x and g(x)=x then g(f(x)) is _________.

- **$2x^2$**

Let f:R->R is one to one function then c,f, c is not equal 0 is also one to one function.

- **True**

Let X={1,2,3,4} and a function 'f' defined from X to X by f(1)=1, f(2)=1, f(3)=1, f(4)=1 then which of the following is true?

- **F is a constant function**

If f and g are two one-to-one functions, then their composition that is gof is one-to-one.

- **True**

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Which of the following is not correct for a 'sequence'?

- **A sequence is a relation whose domain is the set of natural numbers**

F(x)=x^2 is not one to one function from R to R^+

- True

Let f: R->R is one to one function then c,f c is not equal to is also one to one function.

- **True**

Let f(x)=x+2 then f^{-1}(x) is________

- **x-2**

Let f(x)=x^2+1 define functions f from R to R and c=2 be any scalar, then c,f(x) is __________.

- **$2x^2$-1**

One to one correspondence means the condition of __________.

- **Both (a)and (c)**

A function F: R-> R defined by f(x) = square root x is a real valued function.

- **False**

If g:R->R defined by g(x)=e^2 is a real valued function of a real variable.

- **True**

A function F:R-> R defined by f(x) = log x is a real valued function

- **True**

½, then 3rd term of sequence is __________.

- **1/2**

The process of defining an object in terms of smaller versions of itself is called recursion.

- **True**

Which of the following is not correct for a 'sequence'?

- **A sequence is a relation whose domain is the set of natural numbers**

A set is called countable if, and only if, it is ____________.

- **Finite and countable infinite…..both**

A set that is not countable is called ___________.

- **Uncountable**

A sequence whose terms alternate in sign is called an _______.

- **Alternating sequence**

Let f: R->R is one to one function then c,f is also one to one function for _______.

- **C is not equal 0**

Let f(x) = x+3 then $f^{-1}(x)$ is __________-

- **x-3**

Let f and g be two functions defined by f(x) = x+2 and g(x)= 2x+1. Then the composition of f and g is__________.

- **2x+3**

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Number of one to one functions form X={a,b} to Y={u,v} are equal to ______

- 2

The flbonacci sequence is deined as F_0=1,F_1=1, F_k=F_{k-1}+F_{k-2} for all integers k≥2 then which of the following is true for F_2

- F_2-F_1= 2+1=3

x+a, x+3a, x+5a,…… is a/an______.

- Arithmetic sequence

Inverse of a function may not be a function.

- True

In the following sequence a_k=K/(k+1), for k=1, a_1 will be __________.

- ½

If f(x)=x and g(x)= -x are both one to one function then (f+g)(x) is also one to one function.

- False

If f(x)=x and g(x)= -x are both one to one function then (f+g)(x) is not one to one function.

- True

The function 'f' and 'g' are inverse of each other if and only if their composition gives_______.

- Identity function

Which of the following set is the domain of a sequence?

- Set of real numbers

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Let C is defined as the set of all countries in the world then C is a _________.

- **Finite set**

A constant function is surjective if and only if________.

- **The co domain consists of a single element**

The sum of the series $a_1 + a_2 + a_3 + \ldots\ldots$ can be written as ___________.

- $\sum_{i=1}^{\inf inity} a_k$

Inverse of a function may not be a function.

- **True**

$If\_F_k = F_k - 1 + F_k - 2\_then\_F_0 = 1,\_f_1 = 2, then\_F_2 =$ ________

- **3**

Let X={1,2,3,4} and a function 'f' defined from X to X by f(1)=1, f(2)=1, f(3)=1, f(4)=1 then which of the following is true?

- **F is a constant function**

The composition of function is always

- **Associative**

A set is countably infinite if, and only if, it has the same cardinality as the set of

- **Positive integers**

Two functions 'f' and 'g' from 'X' to 'Y' are said to be equal if and only if ______.

- **F(x)=g(x) for all 'x' belongs to X**

$Y=x^3$ is a graph of bijective function from R to R.

- True

Domain and range are same for___________.

- Identity funtion

Let X={1,2,3,4} and a function 'f' defined on X by f(1)=1,f(2)=2,f(3)=3

- F is an identity function

Composition of a function is a commutative operation.

- True

Inverse of a surjective function is always a function.

- False

A function whose inverse function exists is called a/an________.

- Invertible

Given a set X define a function I from X to X by i(x)=x from all x belonging to X . Then_________.

- I is both injective and surjective

Let f: R->R is a one to one function then c,f is also one to one function for.

- C is not equal 0

Let X={1,5,9} and Y={3,4,7}. Define a function f from X to Y such that f(1)=7, f(5)=3, f(9)=______. Which is true for f(9) to make it a one-to-one (injective) function?

- 4

Which of the following is not a predecessors of ak?

- A_k+1

Two functions 'f' and 'g' from X to Y are said to be equal if and only if_________.

- F(x)=g(x) for all 'x' belongs to x

The two functions 'f' and 'g' are equal if _______.

- F(x) =3x and g(x)= $6x^2+3x/2x^2+1$ for all xeR

If first term of a geometric sequence is 2 and common ratio is ½, then 3rd ter, of sequence.

- ¼

Y= squre root x is an __________function form R^+ to R

- One to one function

Y= x^2 is an __________function form R to R^+

- NOT ONE TO ONE FUNTION

If a function (gof)(x) : X->Z is defined as (gof)(x)=g(f(x)) for all xeX, Then the function__________---.

- (gof)

If 0 is the first term and -2 be the common difference of an arithmetic series, then the sum of first five terms of series is _________.

- -20

If f(x)=$\sin^{-1}(x)$ and g(x) = sin x then gof(x) is ___________.

- X

F: X->Y that is both one to one and onto is called a _________.

- Bijective function

What does ‘y’ denotes in a geometric sequence?

- Common ratio

Let g be a function defined by g(x)=x+1. Then the composition of (gog).

- X+2

A graph of a function f is one to one iff every horizontal line intersects the graph in at most one point.

- True

Which of the following is true for the following sequence?

- If n is even, then Cn=2 and if n is odd, then Cn = 0

The function ‘f’ and ‘g’ are inverse of each other if and only if their composition gives___________.

- Identity function

N! is defined to be ____________.

- The product of the integers from 1 to n

Let A = {1,2,3,4} and B={7} then the constant function from A to B

- Both one to one and onto

A set is called countable if, and only if, it is ____________.

- Countably infinite and finite

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If f(x) = x and g(x) = -x are both one to one functions then (f+g)(x) is also one to one function.

- **False**

If a is the 1st term and d be the common difference of an arithmetic sequence then the sequence is a, a+d, a+2d, a+3d….

- **True**

x+a, x+3a, x+5…… is a/an_________.

- **Arithmetic sequence**

inverse of an injective function may not be a function.

- **True**

$y=x^3$ **is a graph of bijective function form R to R**

- **False**

Two functions 'f' and 'g' from x to y are said to be equal if and only if _____.

- **F(x)=g(x) for all 'x' belongs to x**

Common ration in sequence '36, 12, 4 , 4/3, …..' is ……

- **1/3**

A set is called finite if, and only if, is the _______ or there is ---------.

- **Empty set or one-to-one**

Let f(X)=x^2-1 and g(x)=x+1 define functions f and g from R to R, then (f/g)x

- **x-1**

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A graph of a function f is one to one iff every horizontal line intersects the graph in at most one point.

- **True**

Let g be a function defined by g(x) = x+1. Then the composition of (gog).

- **X+2**

F:X->Y that is both one to one and onto is called a __________.

- **Bijective function**

What does 'I' denotes in a geometric sequence?

- **Common ratio**

Let A={1,2,3,4} and B={7} then the constant function from A to B is ______.

- **Both one to one and onto**

N! is defined to be ________.

- **The product of the integers from 1 to n**

A set is called countable if, and only if, it is _________.

- **Both b and c**

Which of the following is the example of an alternating sequence?

- **C_n=n/n+1 for n $\geq$ 0**

X+a, x+3a, x+5a….. is an________

- **Arithmetic sequence**

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0, -5, -10, -15, … is an __________.

- **Arithemetic sequence**

5, 9, 13, 17, … is an __________.

- **Arithemetic sequence**

An important data type in computer programming consists of ____________.

- **Finite sequence**

One-to-one correspondence means the condition of _________.

- **One-one and onto ….both**

Cardinality means the total number of elements in a set.

- **True**

Inverse of a function may not be a function.

- **True**

The functions 'f' and 'g' are inverse of each other if and only if their composition gives ____________.

- **Identity function**

A set is called finite if , and only if, it is the _________ or there is ________.

- **Empty set or one-to-one**

Let f and g be the two functions from R to R defined by f(x) = IXI and g(x) = square root x^2 for all xeR, then __________.

- **F(x) is not equal to g(x)**

If $f^{-1}(x)$ = 6-x/2 then f^{-1} (2) is __________.

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- 2

Let f(2)=3, g(2)=3, f(4)=1 and g(4)=2 then the value of fog(4) is _______.

- 3

An important date type in computer programming consists of _------.

- Finite sequence

Let f(x)=x+3 then $f^{-1}(x)$ is _________.

- X-3

If f:X->Y amd g:Y->Z are both onto function. Then gof : X->Z is _______.

- One-to-one function

The functions 'f' and 'g' are inverse of each other if and only if their composition gives

- Identity function

The two function 'f' and 'g' are equal if _____________.

- F(x) = 3x and g(x) = $6x^2$+3x/2x+1 for all xeR

Two functions 'f' and 'g' from X To Y are said to be equal if and only if------.

- F(x) and g(x) for all 'x' belongs to X

Which of the following set is the domain of a sequence?

- Set of natural numbers

If 1^{st} term of a geometric sequence is 2 and common ratio is 1/2 , then 3^{rd} term of sequence is __________.

- 1/2

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Composition of a function is a commutative operation.

- **True**

If a function (gof)(x): X-> Z is defined as (gof)(x)=g(f(x)) for all xeX. Then the function _________ is known as composition of f and g.

- **(g o f)**

A set is countably infinite if and only if and only if, it has the same cardinality as the set of _________.

- **Positive integers**

The 3rd term of the sequence $b_n=5^n$ is _______.

- **125**

If f is a bijective function then $(f^{-1}(f(x))$ Is equal to _____.

- **X**

Let f(x) = x and g(x) = -x for all xeR, then (f+g)(x) is ____.

0

An infinite sequence may have only a finite number of values.

- **True**

The functions fog and gof are always equal .

- **False**

If f and g are two one-to-one functions, then their composition that is gof is one-to-one.

- **True**

A function whose range consists of only one element is called ___________.

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- **Constant function**

Let X ={1,5,9} and Y={3,4,7}. Define a function f from X to Y such that f(1)=7, f(5)=3, f(9)=4 then which of the following statement about 'f' is true?

- **F is both one-to-one and onto**

$Y=x^3$ is a graph of bijective function from R to R.

- **True**

A function whose inverse function exists is called a/an______.

- **Invertible**

Let F and g be two functions defined by f(x)= x+2 and g(x)= 2x+1. Then the composition of f and g is _____.

- **2x + 5**

If r is a positive real number, then the value of r in 3, r,r=-27r is

- **-9**

The _____ of the terms of a sequence forms a series.

- **Sum**

The sum of first five whole number is _________.

- **10**

If $f_k=f_k-1+f_k-2$then $f_0=1$, $f_1=2$, then $f_2=$ __________.

- **3**

Let f(x) = 3x and g(x) = x + 2 define functions f and g from R to R, then (f.g)(x) is _____.

- $3x^2 + 6x$

Let R be a relation on a set A. If R is reflexive then its compliment is ________ .

- Irreflexive

If A = Set of students of virtual university then A has been written in the _________.

- **Descriptive form**

If a function (g o f)(x):X→Z is defined as (g o f)(x) = g(f(x)) for all x ∈ X. Then the function ________ is known as composition of f and g.

- **(g o f)**

If X and Y are independent random variables and a and b are constants, then Var(aX + bY)is equal to

- **aVar(X) + bVar(Y)**

Let A = {1, 2, 3} and B = {2, 4} then number of functions from A to B are _________.

- **8**

p is equivalent to q' means ________.

- **p is necessary and sufficient for q.**

Let A and B be subsets of U with n(A) = 12, n(B) = 15, n(A') = 17, and n(A intersection B) = 8, then n(U)=______ .

- **29**

For the following relation to be a function, x can not be what values? R = {(2,4), (x,1), (4,2), (5,6)}

- **x cannot be 2, 4 or 5**

Find the number of the word that can be formed of the letters of the word "ELEVEN".

- **120**

There are three bus lines between A and B, and two bus lines between B and C. Find the number of ways a person can travel round trip by bus from A to C by way of B?

- 6

Among 20 people, 15 either swim or jog or both. If 5 swim and 6 swim and jog, how many jog?

- **16**

A predicate becomes _________ when its variables are given specific values.

- **statement**

Find the number of distinct permutations that can be formed using the letters of the word "BENZENE"

- **420**

Suppose there are 8 different tea flavors and 5 different biscuit brands. A guest wants to take one tea and one brand of biscuit. How many choices are there for this guest?

- **40**

In how many ways a student can choose one of each of the courses when he is offered 3 mathematics courses, 4 literature courses and 2 history courses.

- **24**

If p ↔ q is True, then ________.

- **p and q both are True.**

If A and B be events with P(A) = 1/3, P(B) = 1/4 and P(A ∩ B) = 1/6, then P(A ∪ B) = ________ .

- **5/12**

an integer n is a perfect square if and only if ________ for some integer k.

- **n = k^2**

If A and B are disjoint finite sets then n(A ∪ B) = ______.

- n(A) + n(B)

Let X = {2, 4, 5} and Y= {1, 2, 4} and R be a relation from X to Y defined by R = {(2,4), (4,1), (a,2)}. For what value of 'a' the relation R is a function ?

- **5**

∼(P → q) is logically equivalent to _________.

- **p ∧ ∼q**

A tree is normally constructed from ________.

- **left to right**

A Random variable is also called a _________.

- **Chance Variable**

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The conjunction p ∧ q is True when _________.

- **p is True, q is True**

The logical statement p ∧ q means ________.

- **p AND q**

Which of the followings is the factorial form of 5 . 4?

- **5!/3!**

What is the minimum number of students in a class to be sure that two of them are born in the same month?

- **13**

If p is false and q is true, then ∼p ↔ q is ________.

- **True**

If f and g are two one-to-one functions, then their composition that is gof is one-to-one.

- **TRUE**

(p ∨ ∼p) is the ________.

- **Tautology**

(-2)! = _________ ?

- **Undefined**

If p = It is raining, q = She will go to college
"It is raining and she will not go to college"
will be denoted by

- **p ∧ ∼q**

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Let X = {1, 2, 3}, then 2-combinations of the 3 elements of the set X are _________?

- **{1, 2}, {1, 3} and {2, 3}**

Let f(x) = x^2 + 1 define functions f from R to R and c = 2 be any scalar, then c.f(x) is ______.

- **$2x^2 + 2$**

The disjunction of p and q is written as ________.

- **p ∨ q**

If X and Y are independent random variables, then E(XY) is equal to

- **E(x)E(y)**

How many possible outcomes are there when a fair coin is tossed four times?

- **16**

Which of the followings is the product set A * B * C ? where A = {a}, B = {b}, and C = {c, d}.

- **{(a, b, c), (a, b, d)}**

The number of the words that can be formed from the letters of the word,"COMMITTEE" are

- **9! / (2!2!2!)**

One-to-One correspondence means the condition of ______.

- **One-One and onto**

The functions f o g and g o f are always equal.

- FALSE

If order matters and repetition is allowed, then which counting method should be used in order to select 'k' elements from a total of 'n' elements?

- K-Sample

Determine values of x and y, where (2x, x + y) = (8, 6).

- x = 4 and y = 2

Let g be a function defined by g(x) = x + 1. Then the composition of (g o g)(x)is ______.

- x + 2

What is the truth value of the sentence?
'It rains if and only if there are clouds.'

- False

Reductio and absurdum' is another name of _________.

- Proof by contradiction

X belongs to A or x belongs to B, therefore x belongs to ________.

- A union B

Which of the followings is the product set A * B * C? Where A = {a}, B = {b}, and C = {c, d}.

- {(a, b, c), (a, b, d)}

Real valued function is a function that assigns _______ to each member of its domain.

- **Only a real number**

The negation of “Today is Friday” is

- **Today is not Friday**

A non-zero integer d divides an integer n if and only if there exists an integer k such that _________.

- **n = d k**

The statement p → q is logically equivalent to ∼q → ∼p

- **True**

Let R be the universal relation on a set A then which one of the following statement about R is true?

- **R is reflexive, symmetric and transitive.**

Let f(x)=3x and g(x) = 3x − 2 define functions f and g from R to R. Then (f+g)(x) = ________.

- **6x − 2**

The switches in parallel act just like ________.

- **OR gate**

The converse of the conditional statement p → q is

- **q → p**

If X and Y are random variables, then E(aX) is equal to

- **aE(X)**

Which of the following statements is true according to the Division Algorithm?

- **17 = 5 x 3 + 2**

Let p → q be a conditional statement, then the statement q → p is called ________.

- **Converse**

The disjunction p ∨ q is False when ________.

- **P is False, q is False.**

A student can choose a computer project from one of the two lists. The two lists contain 12 and 18 possible projects, respectively. How many possible projects are there to choose from?

- **30**

The converse of the conditional statement 'If I live in Quetta, then I live in Pakistan' is ________.

- **If I live in Pakistan, then I live in Quetta.**

The functions 'f' and 'g' are inverse of each other if and only if their composition gives _______.

- **Identity function**

P (0, 0)=______?

- **1**

Let p1, p2, p3 be True premises in a given Truth Table. If the conjunctions of the Conclusion with each of p1, p2, p3 are True, then the argument is ________.

- **Valid**

If p is false and q is false, then ∼p implies q is ________.

- **False**

A box contains 5 different colored light bulbs. Which of the followings is the number of ordered samples of size 3 with replacement?

- **125**

Let A = {2, 3, 5, 7}, B = {2, 3, 5, 7, 2}, C = Set of first five prime numbers. Then from the following which statement is true ?

- **A = B**

The set of prime numbers is _________.

- **Infinite set**

The contrapositive of the conditional statement 'If it is Sunday, then I go for shopping' is ________.

- **I do Not go for shopping, then it is Not Sunday.**

Let p be True and q be True, then (∼p ∧ q) is ________.

- **False**

In how many ways a student can choose a course from 2 science courses,3 literature courses and 5 art courses.

- **30**

The method of loop invariants is used to prove __________ of a loop with respect to certain pre and post-conditions.

- **correctness**

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A student is to answer five out of nine questions on exams. Find the number of ways that can choose the five questions

- **126**

If A and B are any two sets, then A − B = B – A

- **False**

There are 5 girls students and 20 boys students in a class. How many students are there in total?

- **25**
