

Gujranwala Board

10th – 2019

Mathematics Group 1

i) An equation which remains unchanged when x is replaced by $1/x$ is called a/an _____ equation. (Mark 1)

- A. Exponential
- B. Reciprocal
- C. Radical
- D. Linear

Answer:

B. Reciprocal

ii) Product of cube roots of unity is. (Mark 1)

- A. 0
- B. 1
- C. -1
- D. 3

Answer:

B. 1

iii) If α, β are the roots of $x^2 - x - 1 = 0$, then the product of the roots 2α and 2β is (Mark 1)

- A. -2
- B. 2
- C. 4
- D. -4

Answer:

D. -4

iv) The third proportional of x^2 and y^2 is (Mark 1)

- A. y^2/x^2
- B. y^2x^2
- C. y^4/x^2
- D. y^2/x^4

Answer:

C. y^4/x^2

v) If $u/v = v/w = k$ then (Mark 1)

- A. $u = wk^2$
- B. $u = vk^2$
- C. $u = w^2k$
- D. $u = v^2k$

Answer:

A. $u = wk^2$

vi) Partial fractions of $x^2 + 1 / (x+1)(x-1)$ are of _____ form. (Mark 1)

- A. $A/(x+1)+B/(x-1)$
- B. $1+A/(x+1)+Bx+C/(x-1)$
- C. $1+A/(x+1)+B/(x-1)$
- D. $Ax+B/(x+1)+C/(x-1)$

Answer:

- A. $A/(x+1)+B/(x-1)$

vii) If $A \subseteq B$ then $A-B$ is equal to _____

(Mark 1)

- A. \emptyset
- B. B
- C. A
- D. B-A

Answer:

- A. \emptyset

viii) If the number of elements in a set A is 3 and in set B is 2, then number of binary relations in $A \times B$ is _____ (Mark 1)

- A. 2^3
- B. 2^6
- C. 2^8
- D. 2^2

Answer:

- B. 2^6

ix) Sum of the deviations of the variable X from its means is always equal to _____ (Mark 1)

- A. Zero
- B. One
- C. Same
- D. Two

Answer:

- A. Zero

x) $20^\circ =$ _____

(Mark 1)

- A. $360'$
- B. $630'$
- C. $1200'$
- D. $3600'$

Answer:

- C. $1200'$

xi) $\operatorname{cosec}^2\theta - \cot^2\theta =$

(Mark 1)

- A. 1
- B. -1
- C. 0
- D. $\tan\theta$

Answer:

- A. 1

xii) Locus of a point in a plane is equidistant from a fixed point is called _____

(Mark 1)

- A. Radius
- B. Circle
- C. Circumference
- D. Diameter

Answer:

- B. Circle

xiii) A tangent line intersects the circle at _____ (Mark 1)

- A. Three points
- B. Two points
- C. Single point
- D. no point at all

Answer:

- C. Single point

xiv) The semi-circumference and the diameter of a circle both subtends a central angle of _____ (Mark 1)

- A. 90°
- B. 360°
- C. 270°
- D. 180°

Answer:

- D. 180°

xv) _____ common tangents can be drawn for two touching circles. (Mark 1)

- A. 2
- B. 5
- C. 4
- D. 3

Answer:

- D. 3

Q.2 i) Define radical equation and give one example. (Marks 2)

Q.2 ii) Solve $x^2+2x-2=0$ (Marks 2)

Q.2 iii) Find the discriminant of the equation $x^2-5x+5=0$ (Marks 2)

Q.2 iv) Evaluate $(1-\omega-\omega^2)^7$ (Marks 2)

Q.2 v) If α, β are the roots of the equation $2x^2+3x+4=0$ then find the value of $\alpha+\beta$ and $\alpha\beta$. (Marks 2)

Q.2 vi) Define simultaneous equations. (Marks 2)

Q.2 vii) Define inverse variation. (Marks 2)

Q.2 viii) If $A \propto 1/r^2$, $A = 2$ when $r = 3$, then find r when $A = 72$. (Marks 2)

Q.2 ix) Find a mean proportional between 20,45. (Marks 2)

Q.3 i) Resolve $7x-9/(x+1)(x-3)$ into partial fractions. (Marks 2)

- Q.3 ii) Find $(B-A)$ and $(A-B)$ when $A=\{1,2,3,4,5\}$, $B=\{2,4,5,6,8\}$. (Marks 2)
- Q.3 iii) Find $A \times B$ when: $A=\{1,2,3\}$, $B=\{2,5\}$. (Marks 2)
- Q.3 iv) Find A^c when $U=\{1,2,3,\dots,10\}$, $A=\{2,3,5,7\}$ (Marks 2)
- Q.3 v) Find domain and range of $R:R=\{(b,a),(c,a),(d,a)\}$ (Marks 2)
- Q.3 vi) Find arithmetic mean for the data:
200,225,350,375,270,320,290 (Marks 2)
- Q.3 vii) Define Harmonic Mean. (Marks 2)
- Q.3 viii) Define Variance. (Marks 2)
- Q.3 ix) The salaries of five teachers are as follows, find its range. 11500, 12400, 15000, 14500, 14800. (Marks 2)
- Q.4 i) Convert $7\pi/8$ into degree. (Marks 2)
- Q.4 ii) Find θ , when $l = 4.5$ m and $r = 2.5$ m. (Marks 2)
- Q.4 iii) Define Right angle. (Marks 2)
- Q.4 iv) Define circular area of circle. (Marks 2)
- Q.4 v) Define the length of a tangent. (Marks 2)
- Q.4 vi) Define segment of a circle. (Marks 2)
- Q.4 vii) Define Circum-angle. (Marks 2)
- Q.4 viii) Define arc. (Marks 2)
- Q.4 ix) Define regular Polygon. (Marks 2)
- Q.5 b) Solve the simultaneous equations: $x+y=5$; $x^2-2y-14=0$ (Marks 4)
- Q.7 a) If $U = \{1,2,3,4,\dots,10\}$, $A = \{1,3,5,7,9\}$, and $B=\{1,4,7,10\}$, then verify $B-A = B \cap A'$ (Marks 4)
- Q.7 b) Calculate Variance for the data: 10,8,9,7,5,12,8,6,8,2 (Marks 4)
- Q.8 b) Draw two perpendicular tangents to a circle of radius 3 cm. (Marks 4)
- Q.9) Prove that the perpendicular tangents to a circle of radius 3 cm. (Marks 8)
- OR
- Q.9) Prove that any two angles in the same segment of a circle are equal. (Marks 8)

Gujranwala Board

10th – 2019

Mathematics Group 2

i) The number of elements in the power set of $\{1,2,3\}$ is: (Mark 1)

- A. 4
- B. 6
- C. 8
- D. 9

Answer:

C. 8

ii) In a proportion $a:b :: c:d$, "a" and "d" are called (Mark 1)

- A. Mean
- B. Extreme
- C. Third proportional
- D. Fourth proportional

Answer:

B. Extreme

iii) Locus of a point in a plane is equidistant from a fixed point is called (Mark 1)

- A. Radius
- B. Circle
- C. Circumference
- D. Diameter

Answer:

B. Circle

iv) $2x+1/(x-1)(x+2)$ is: (Mark 1)

- A. Improper fraction
- B. Proper fraction
- C. Identity
- D. Equation

Answer:

B. Proper fraction

v) A line intersecting a circle is called: (Mark 1)

- A. Tangent
- B. Secant
- C. Chord
- D. Boundary

Answer:

A. Tangent

vi) The distance between the centres of two congruent touching circles externally is: (Mark 1)

- A. The diameter of each circle
- B. The radius of each circle
- C. of zero length
- D. Twice the diameter of each circle

Answer:

- B. The radius of each circle

vii) The discriminant of the equation $ax^2+bx+c=0$ is (Mark 1)

- A. b^2-4ac
- B. b^2+4ac
- C. $\sqrt{b^2+4ac}$
- D. $\sqrt{b^2-4ac}$

Answer:

- A. b^2-4ac

viii) The factors of $x^2-15x+56$ are: (Mark 1)

- A. $(x-7)(x+8)$
- B. $(x+7)(x-8)$
- C. $(x-7)(x-8)$
- D. $(x+7)(x+8)$

Answer:

- C. $(x-7)(x-8)$

ix) The semi circumference and the diameter of a circle both subtends a central angle of _____ (Mark 1)

- A. 90°
- B. 360°
- C. 270°
- D. 180°

Answer:

- D. 180°

x) The terminal side of angle 235° lies in _____ quadrant. (Mark 1)

- A. I
- B. II
- C. III
- D. IV

Answer:

- D. IV

xi) Two square roots of unity are. (Mark 1)

- A. 1, -1
- B. 1, ω
- C. 1, $-\omega$
- D. ω , ω^2

Answer:

- A. 1, -1

xii) In the proportion $7:4::p:8$ the value of p is: (Mark 1)

- A. 4
- B. 7
- C. 8

D. 14

Answer:

D. 14

xiii) If the number of elements in set A is 3 and in set B is 4 then the number of elements in $A \times B$ is (Mark 1)

A. 3

B. 4

C. 7

D. 12

Answer:

D. 12

xiv) $\sec\theta \cot\theta = \underline{\hspace{2cm}}$ (Mark 1)

A. $\sin\theta$

B. $1/\cos\theta$

C. $1/\sin\theta$

D. $\sin\theta/\cos\theta$

Answer:

C. $1/\sin\theta$

xv) The mean is affected by change in (Mark 1)

A. Place

B. Value

C. Ratio

D. Scale

Answer:

D. Scale

Q.2 i) Solve the equation: $x^2+2x-2=0$ (Marks 2)

Q.2 ii) Define Reciprocal equation. (Marks 2)

Q.2 iii) Evaluate $(1-\omega-\omega^2)^7$ (Marks 2)

Q.2 v) Using synthetic division, show that $(x-2)$ is the factor of x^3+x^2-7x+2 (Marks 2)

Q.2 vi) Define Symmetric function. (Marks 2)

Q.2 vii) Find the cost of 8 Kg of mangoes, if the cost of 5 Kg of mangoes is Rs.250. (Marks 2)

Q.2 viii) If $y \propto x$, and $y=7$ when $x=3$ find 'y' in terms of 'x'. (Marks 2)

Q.2 ix) Define Proportion. (Marks 2)

Q.3 i) Define improper fraction. (Marks 2)

Q.3 ii) If $U = \{1, 2, 3, 4, \dots, 10\}$, $A = \{1, 3, 5, 7, 9\}$ and $B = \{1, 4, 7, 10\}$ then find $(A-B)'$ (Marks 2)

Q.3 iii) Define Function. (Marks 2)

Q.3 iv) Find 'a' and 'b' if $(2a+5, 3) = (7, b-4)$ (Marks 2)

- Q.3 v) If set M has 5 elements then find the number of binary relations in M. (Marks 2)
- Q.3 vi) Define Harmonic mean. (Marks 2)
- Q.3 vii) Define Range. (Marks 2)
- Q.3 viii) Find arithmetic mean by direct method:
12,14,17,20,24,29,35,45 (Marks 2)
- Q.4 i) Express 300° angle into radian. (Marks 2)
- Q.4 ii) Find r when $l = 52$ cm, $\theta = 45^\circ$ (Marks 2)
- Q.4 iii) Define Projection. (Marks 2)
- Q.4 iv) Define Circle. (Marks 2)
- Q.4 v) Define length of tangent. (Marks 2)
- Q.4 vi) Define arc. (Marks 2)
- Q.4 vii) Define central angle. (Marks 2)
- Q.4 viii) Define Perimeter. (Marks 2)
- Q.4 ix) Define Polygon. (Marks 2)
- Q.5 b) Find the value of "h" using synthetic division, if 1 is the zero of polynomial $x^3 - 2hx^2 + 11$ (Marks 4)
- Q.7 a) If $X = \{1, 3, 5, 7, \dots, 19\}$, $Y = \{0, 2, 4, 6, 8, \dots, 20\}$ and $Z = \{2, 3, 5, 7, 11, 13, 17, 19, 23\}$ then find $(X \cap Y) \cup (X \cap Z)$ (Marks 4)
- Q.7 b) Calculate Variance for the data: 10, 8, 9, 7, 5, 12, 8, 6, 8, 2 (Marks 4)
- Q.8 b) Circumscribe a circle about an equilateral triangle ABC with each side of length 4 cm. (Marks 4)
- Q.9) Prove that a straight line, drawn from the centre of a circle to bisect a chord (which is not a diameter) is perpendicular to the chord. (Marks 8)
- OR
- Q.9) Prove that the measure of a central angle of a minor arc of a circle, is double that of the angle subtended by the corresponding major arc. (Marks 8)