MATHS

BOOKS - SURA MATHS (TAMIL ENGLISH)

COMMON QUARLERLY EXAMINATION-2019

Part I

1. $f(x) = (x+1)^3 - (x-1)^3$ represents a functions which is

A. linear

B. cubic

C. reciprocal

D. quadratic

Answer: D

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2. If $n(A) = p$ and $n(B) = q$ then $n(A \times B)$____.

A. $p + q$

B. $p - q$

C. $p \times q$

D. $\frac{p}{q}$

Answer: C

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3. If (x-6) is the HCF of $x^2 - 2x - 24$ and $x^2 - kx - 6$ then the value of k is.

A. 3

B. 4

C. 5

D. 8

Answer: B

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4. $y^2 + \frac{1}{y^2}$ is not equal to

A. $\frac{y^4 + 1}{y^2}$

B. $\left(y + \frac{1}{y}\right)^2$

C. $\left(y-\frac{1}{y}\right)^2+2$

D. $\left(y+\frac{1}{y}\right)^2-2$

Answer: B

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5. Product of the roots of the quadratic equation $x^2+3x=0$ is

A. -3

B. 3

C. 0

D. 1

Answer: C

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6. $7^{4k} =\_\ \_ \pmod{100}$

A. 1

B. 2

C. 3

D. 4

Answer: A

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7. The next term of the sequences $\frac{3}{16}, \frac{1}{8}, \frac{1}{12}, \frac{1}{18}, \ldots$

A. $\frac{1}{24}$

B. $\frac{1}{27}$

C. $\frac{2}{3}$

D. $\frac{1}{81}$

Answer: B

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8. A sequence is a function defined on the set of___.

A. Real numbers

B. Natural numbers

C. Whole numbers

D. Integers

Answer: B

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9. If $\triangle LMN, \angle L = 60^\circ, \angle M = 50^\circ,$ if $\triangle LMN - \triangle PQR$ then the value of $\angle R$ is ___.

A. 40°

B. 70°

C. 30°

D. 110°

Answer: B

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10. If $\triangle ABC, DE \| BC, AB = 3.6m, AC = 2.4cm$ and $AD = 2.1cm$ then the length of AE=

A. 1.4 cm

B. 1.8 cm

C. 1.2 cm

D. 1.05 cm

Answer: A

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11. The area of triangle formed by the points $(-5, 0), (0, -5)$ and $(5, 0)$ is

A. 0 sq.units

B. 25 sq.units

C. 5 sq.unis

D. None of these

Answer: B

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12. The inclination of a line whose slope is 1 is

A. `0^(@)

B. 30°

C. 45°

D. 60°

Answer: C

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13. $\tan\theta \cos ec^2\theta - \tan\theta$ is equal to

A. $\sec\theta$

B. $\cot^2\theta$

C. $\sin\theta$

D. $\cot\theta$

Answer: D

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14. The range of the data 8,8,8,8,8..8 is

A. 0

B. 1

C. 8

D. 3

Answer: A

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Part Ii

1. If $B \times A = \{(-2, 3), (-2, 4), (0, 3), (0, 4), (3, 3), (3, 4)\}$ find the A and B.

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2. A relation 'f' is defined by $f(x) = x^2 - 2$ where $\xi n\{-2, -1, 0, 3\}$

List the elements of f.

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3. A relation 'f' is defined by $f(x) = x^2 - 2$ where $\xi n\{-2, -1, 0, 3\}$

Is f a function?

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4. Find the greatest number that will divide 445 and 572 leaving remainders 4 and 5 respectively.

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5. Which term of an A.P. $16, 11, 6, 1, \ldots$ is -54?

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6. Reduce the rational expression $\frac{x^2 - 16}{x^2 + 8x + 16}$ to its lowest form.

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7. Determine the quadratic equations, whose sum and product of roots are

$\frac{-3}{2}, -1$

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8. If $\triangle ABC$ is similar to $\triangle DFE$ such that BC=3cm, EF=4cm and area of $\triangle ABC = 54cm^2$. Find the area of $\triangle DFE$.

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9. Prove:

$$\frac{\cos\theta}{1+\sin\theta} = \sec\theta - \tan\theta$$

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10. The standard deviation and mean of a data are 6.5 and 12.5 respectively. Find the coefficient of variation.

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11. What is the slope of the line whose inclination is 30°?

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12. The line through the points $(-2, a)$ and $(9, 3)$ has slope $\frac{-1}{2}$. Find the value of a.

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13. Let $A = \{1, 2, 3, 4, 5, 6\}$, $B = W$ and $f: A \to$ is defined by $f(x) = x^2 - 1$ find the range of f.

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14. If a clock strickes once at 1 o'clock, twice at 2o'clock, thrice at 3 o'clock and so on. How many times will it strikes in day?

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15. Find the zeros of the quadratic expression $x^2 + 2x - 143$.

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Part Iii

1. Given $A = \{1, 2, 3\}, B = \{2, 3, 5\}, C = \{3, 4\}$ and $D = \{1, 3, 5\}$, check $(A \cap C) \times (B \cap D) = (A \times B) \cap (C \times D)$ is true?

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2. If $f(x) = 3x - 2, g(x) = 2x + k$ and if fog=gof, then find the value of k.

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3. The sum of first n, 2n and 3n terms of an A.P. are S_1, S_2, S_3 respectively. Prove that $S_3 = 3(S_2 - S_1)$.

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4. Find the sum of the following series

$6^2 + 7^2 + 8^2 + \ldots + 21^2$

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5. Find the GCD of the given polynomials

$3x^4 + 6x^3 - 12x^2 - 24x, 4x^4 + 14x^3 + 8x^2 - 8x$

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6. Find the square root of the expressions

$\frac{x^2}{y^2} - 10\frac{x}{y} + 27 - 10\frac{y}{x} + \frac{y^2}{x^2}$

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7. State and prove angle bisector theorem.

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8. If the points $A(-3, 9), B(a, b)$ and $C(4, -5)$ are collinear and if $a + b = 1$, find the a and b.

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9. Using slope concept show that the points $(1, -4), (2, -3)$ and $(4, -7)$ form a right angled triangle.

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10. If $\sin\theta + \cos\theta = p$ and $\sec\theta + \cos ec\theta = q$, then prove that $q(p^2 - 1) = 2p$

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11. The time taken (in minutes) to complete a homework by 8 students in a day are given by 38,40,47,44,46,43,49,53. Find the coefficient of variation.

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12. The number of books read by 8 students during a month are 2,5,8,11,14,6,12 and 10. Calculate the standard deviation of the data.

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13. Solve the qudratic equation $5x^2 - 6x - 2 = 0$ by completing the square method.

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14. If the 4th and 7th term of Geometrics Progressions are 54 and 1458 respectively, find the Geometric Progression.

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Part Iv

1. Construct a triangle similar to a given triangle PQR with its sides equal to (7)/(3) of the corresponding sides of the triangle PQR.

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2. In ΔABC, if DE|| BC, AD=x DB=x-2, AE= x+2 and EC=x-1 then find the length of the sides AB and AC.

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3. Draw the graph $y = x^2 + 3x - 4$ and hence use it to solve $x^2 + 3x - 4 = 0$.

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4. Solve $\frac{1}{3}(x+y-5)=y-z=2x-11=9-(x+2z)$.

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