NAME :

CLASS & SEC. :

3 ALGEBRA

"A person who can, within a year, solve $x^2 - 92y^2 = 1$ is amathematician" - *Brahmagupta*

1. A system of three linear equations in three variables is inconsistent if their planes

   (A) intersect only at a point (B) intersect in a line

   (C) coincides with each other (D) do not intersect

2. The solution of the system $x + y - 3z = -6$, $-7y + 7z = 7$, $3z = 9$ is

   (A) $x = 1, y = 2, z = 3$ (B) $x = -1, y = 2, z = 3$

   (C) $x = -1, y = -2, z = 3$ (D) $x = 1, y = -2, z = 3$

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) 5 (C) 6 (D) 8

4. $\frac{3y-3}{y} \div \frac{7y-7}{3y^2}$ is

   (A) $\frac{9y}{7}$ (B) $\frac{9y^3}{(21y-21)}$ (C) $\frac{21y^2 - 42y + 21}{3y^3}$ (D) $\frac{7(y^2 - 2y + 1)}{y^2}$

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

6. $\frac{x}{x^2 - 25} - \frac{8}{x^2 + 6x + 5}$ gives

   (A) $\frac{x^2 - 7x + 40}{(x-5)(x+5)}$ (B) $\frac{x^2 + 7x + 40}{(x-5)(x+5)(x+1)}$

   (C) $\frac{x^2 - 7x + 40}{(x^2-25)(x+1)}$ (D) $\frac{x^2 + 10}{(x^2-25)(x+1)}$

7. The square root of $\frac{256x^8y^4z^{10}}{25x^6y^6z^6}$ is equal to

   (A) $\frac{16}{5}\left|\frac{x^2z^4}{y^2}\right|$ (B) $16\left|\frac{y^2}{x^2z^4}\right|$ (C) $\frac{16}{5}\left|\frac{y}{xz^2}\right|$ (D) $\frac{16}{5}\left|\frac{xz^2}{y}\right|$

8. Which of the following should be added to make $x^4 + 64$ a perfect square

   (A) $4x^2$ (B) $16x^2$ (C) $8x^2$ (D) $-8x^2$

9. The solution of $(2x-1)^2 = 9$ is equal to

   (A) -1 (B) 2 (C) $-1, 2$ (D) None of these

10. The values of a and b if $4x^4 - 24x^3 + 76x^2 + ax + b$ is a perfect square are

    (A) 100,120 (B) 10,12 (C) -120,100 (D) 12,10

11. If the roots of the equation $q^2x^2 + p^2x + r^2 = 0$ are the squares of the roots of the equation $qx^2 + px + r = 0$, then q, p, r are in _____

    (A) $A.P$ (B) $G.P$ (C) Both $A.P$ and $G.P$ (D) none of these

12. Graph of a linear equation is a _____

    (A) straight line (B) circle (C) parabola (D) hyperbola

13. The number of points of intersection of the quadratic polynomial $x^2 + 4x + 4$ with the X axis is

    (A) 0 (B) 1 (C) 0 or 1 (D) 2

14. For the given matrix $A = \begin{pmatrix} 1 & 3 & 5 & 7 \\ 2 & 4 & 6 & 8 \\ 9 & 11 & 13 & 15 \end{pmatrix}$ the order of the matrix A^T is

    (A) 2×3 (B) 3×2 (C) 3×4 (D) 4×3

15. If A is a 2×3 matrix and B is a 3×4 matrix, how many columns does AB have

    (A) 3 (B) 4 (C) 2 (D) 5

16. If number of columns and rows are not equal in a matrix then it is said to be a

    (A) diagonal matrix (B) rectangular matrix

    (C) square matrix (D) identity matrix

17. Transpose of a column matrix is

    (A) unit matrix (B) diagonal matrix

    (C) column matrix (D) row matrix

18. Find the matrix X if $2X + \begin{pmatrix} 1 & 3 \\ 5 & 7 \end{pmatrix} = \begin{pmatrix} 5 & 7 \\ 9 & 5 \end{pmatrix}$

    (A) $\begin{pmatrix} -2 & -2 \\ 2 & -1 \end{pmatrix}$ (B) $\begin{pmatrix} 2 & 2 \\ 2 & -1 \end{pmatrix}$ (C) $\begin{pmatrix} 1 & 2 \\ 2 & 2 \end{pmatrix}$ (D) $\begin{pmatrix} 2 & 1 \\ 2 & 2 \end{pmatrix}$

19. Which of the following can be calculated from the given matrices

    $A = \begin{pmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{pmatrix}, B = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix}$, (i) A^2 (ii) B^2 (iii) AB (iv) BA

    (A) (i) and (ii) only (B) (ii) and (iii) only

    (C) (ii) and (iv) only (D) all of these

20. If $A = \begin{pmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \end{pmatrix}$, $B = \begin{pmatrix} 1 & 0 \\ 2 & -1 \\ 0 & 2 \end{pmatrix}$ and $C = \begin{pmatrix} 0 & 1 \\ -2 & 5 \end{pmatrix}$. Which of the following statements are correct? (i) $AB + C = \begin{pmatrix} 5 & 5 \\ 5 & 5 \end{pmatrix}$ (ii) $BC = \begin{pmatrix} 0 & 1 \\ 2 & -3 \\ -4 & 10 \end{pmatrix}$

    (iii) $BA + C = \begin{pmatrix} 2 & 5 \\ 3 & 0 \end{pmatrix}$ (iv) $(AB)C = \begin{pmatrix} -8 & 20 \\ -8 & 13 \end{pmatrix}$

    (A) (i) and (ii) only (B) (ii) and (iii) only

    (C) (iii) and (iv) only (D) all of these

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LIVEWORKSHEETS