

INDIAN SCHOOL AL WADI AL KABIR
Class XII, Applied Mathematics Revision **Worksheet- UNIT TEST**
30-05-2021

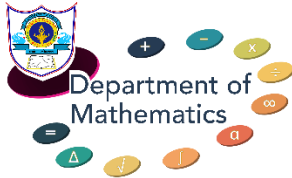
OBJECTIVE TYPE (1 Mark)

Q.1.	1. If $A = \begin{bmatrix} x & 0 & 1 \\ 4 & -1 & 4 \\ 0 & 1 & 0 \end{bmatrix}$ is a singular matrix, find x.							
	A	1	B	-1	C	0	D	2
Q.2.	If matrix $A = [1\ 2\ 3]$ then write AA' , where A' is the transpose of A.							
	A	$[1\ 4\ 9]$	B	$[14]$	C	$\begin{bmatrix} 1 \\ 4 \\ 9 \end{bmatrix}$	D	$\begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 6 \\ 3 & 6 & 9 \end{bmatrix}$
Q.3.	Find the value of x from the matrix equation. $\begin{bmatrix} 1 & 3 \\ 4 & 5 \end{bmatrix} \begin{bmatrix} x \\ 2 \end{bmatrix} = \begin{bmatrix} 5 \\ 6 \end{bmatrix}$							
	A	0	B	1	C	-1	D	5
Q.4.	A is a non-singular matrix of order 3 and $ A = -4$, then $ adjA $							
	A	4	B	12	C	-16	D	16
Q.5.	If $x \begin{bmatrix} 2 \\ 3 \end{bmatrix} + y \begin{bmatrix} -1 \\ 1 \end{bmatrix} = \begin{bmatrix} 10 \\ 5 \end{bmatrix}$ find the value of $x - y$.							
	A	0	B	1	C	-1	D	7
Q6	If $y = (x^x + e^{x^2})$, find $\frac{dy}{dx}$							
	A	$x^x + e^{x^2} 2x$	B	$x^x + e^{x^2}$	C	$x^x(1 + \log x) + 2xe^{x^2}$	D	$x^x \log x + e^{x^2}$
Q7	If $f(x) = \begin{cases} x^2 + 3x, & x \leq 1 \\ ax + 2, & x > 1 \end{cases}$ is differentiable at $x = 1$, then a =							
	A	3	B	5	C	2	D	1

Q8	If each element of a second order determinant is either zero or one, how many matrices can be written such that the value of the determinant is positive?							
	A	1	B	2	C	3	D	4
Q9	Second derivative of $x^2 + \log x$							
	A	$2 - \frac{1}{x^2}$	B	$\frac{1}{x^2}$	C	$2x + \frac{1}{x}$	D	$2 + \frac{1}{x^2}$
Q10	If $x^y = a^b$, then $\frac{dy}{dx}$							
	A	$\frac{y}{x \log x}$	B	$-\frac{y}{x \log x}$	C	$\frac{x}{y \log x}$	D	$-\frac{x}{y \log x}$
Q11	The derivative of $e^x + e^{2x} + e^{3x}$ at $x = 1$							
	A	$6e$		$e + e^2 + e^3$	C	$e + 2e^2 + 3e^3$	D	$3e$
Q12	If $x = t^4$, $y = t^2 + 2$, then $\frac{dy}{dx}$ at $t = 1$							
	A	0	B	1	C	$\frac{1}{2}$	D	$\frac{2}{3}$
Q13	If $y = \frac{x^2}{\log x}$, then $\frac{dy}{dx}$							
	A	$\frac{x(2 \log x - 1)}{(\log x)^2}$	B	$\frac{x(2 \log x + 1)}{(\log x)^2}$	C	$\frac{x(2 \log x - x)}{(\log x)^2}$	D	$\frac{x(2 \log x + x)}{(\log x)^2}$
Q14	If A is a matrix of order 2×4 and B is a matrix of 4×3 then							
	A	AB is a matrix of order 2×3	B	BA is a matrix of order 3×2	C	$AB = BA$	D	None of these
Q15	$A = \begin{pmatrix} 7 & 14 \\ 2 & 4 \end{pmatrix}$, then A^{-1}							
	A	$\begin{pmatrix} 4 & -14 \\ -2 & 7 \end{pmatrix}$	B	$\begin{pmatrix} 7 & -2 \\ -14 & 4 \end{pmatrix}$	C	$\begin{pmatrix} 4 & -2 \\ -14 & 7 \end{pmatrix}$	D	does not exist

Q16.	On her birth day, Seema decided to donate some money to children of an orphanage home. If there were 8 children less, everyone would have got ₹10 more. However, if there were 16 children more, everyone would have got ₹ 10 less. Let the number of children be x and the amount distributed by Seema for one child be y (in ₹) Based on the information given above, answer the following questions:							
(i)	The equations in terms x and y are							
	A	$5x-4y = 40,$ $5x-8y = -80$	B	$5x-4y = 40,$ $5x-8y = 80$	C	$5x-4y = 40$ $5x+8y = -8$	D	$5x+4y = 40$ $5x-8y = -8$
(ii)	The number of children who were given some money by Seema, i							
	A	30	B	40	C	23	D	32
(iii)	How much amount is given to each child by Seema?							
	A	32	B	30	C	60	D	26
(iv)	How much amount Seema spends in distributing the money to all the students of the Orphanage?							
	A	₹609	B	₹690	C	₹960	D	₹906
Q17	The area of triangle whose vertices are (1, -1), (-4, 6) and (-3, -5) =Sq. units							
	A	12	B	24	C	36	D	48
Q18.	A is a square matrix and $A^2 = I$, then A^{-1}							
	A	I	C	0	C	A	D	2A
Q19.	State TRUE or FALSE: Two matrices are equal if they are of the same order and their corresponding elements are equal							
Q20.	Which of the following is correct?							
	A	Matrix multiplication is commutative			B	Matrix addition is commutative		
	C	Matrix subtraction is commutative			D	All statements A, B and C are correct		

Q21.	Solve for x: $\begin{vmatrix} x & 4 & 1 \\ 4 & x & 8 \\ 5 & 5 & x \end{vmatrix} = 0$								
A	-9 or 4 or 5	B	9 or -4 or -5	C	9 or 4 or 5	D	-9 or 4 or -5		
Q22.	A matrix has 12 elements. Which of the following may be the order of the matrix?								
A	6x6	B	4x8	C	12x12	D	12x1		
Q23.	$\begin{vmatrix} -a^2 & ab & ac \\ ba & -b^2 & bc \\ ca & cb & -c^2 \end{vmatrix} =$								
A	4abc	B	-4abc	C	$4a^2b^2c^2$	D	$-4a^2b^2c^2$		
Q24.	Which of the following is correct?								
A	Determinant is a square matrix	B	Determinant is a number associated to a matrix	C	Determinant is a number associated to a square matrix.	D	None of these		
Q25	Which of the following is correct for the given system of linear equations? $3x - y - 2z = 2, 2y - z = -1, 3x - 5y = 3$								
A	Unique solution	B	No solution	C	Infinite solutions	D	None of these		
Q26	The sum of three numbers is 6. If we multiply third number by 3 and add second number to it, we get 11. By adding first and third numbers, we get double of the second number. Represent these conditions using matrix algebra.								
Q27.	Write a 3×3 matrix such that $A = [a_{ij}]$, such that $a_{ij} = \frac{(i+j)^2}{2}$								



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Answers

Answers	1	A	2	B	3.	C	4	D
	5	D	6	C	7	B	8	C
	9	A	10	B	11	C	12	C
	13	A	14	A	15	D	16 (i)	A
	16 (ii)	D	16 (iii)	B	16 (iv)	C	17	B
	18	C	19	TRUE	20	B	21	A
	22	D	23	C	24	C	25	A
	26	$\begin{pmatrix} 1 & 1 & 1 \\ 0 & 1 & 3 \\ 1 & -2 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 6 \\ 11 \\ 0 \end{pmatrix}$				27	$\begin{pmatrix} 2 & \frac{9}{2} & 8 \\ \frac{9}{2} & 8 & \frac{25}{2} \\ 8 & \frac{25}{2} & 18 \end{pmatrix}$	
