INDIAN SCHOOL AL WADI AL KABIR
Holiday Homework

Class:XI   Mathematics   18/12/2018

Q.No	Questions	Ans
1	Evaluate $(i^{25} + i^{-56} + i^{67})$	1
2	Find mean deviation about mean : 4,3,3,2,5,6,2,6,5,4	1.2
3	Solve : $3(x+2) + 9 < 5x + 11$, if x is a natural number.	$\{2, 3, 4, \dots\}$
4	Reduce the following equation into normal form and slope intercept form:$\sqrt{3}x = 4 + y$. ($Ans: x\cos\frac{11\pi}{6} + y\sin\frac{11\pi}{6} = 2; y = \sqrt{3}x - 4$)	
5	How many words can be formed from the letters of the word DIRECTOR so that i) the vowels always come together ii) the vowels never come together.	2160, 18000
6	A committee of 7 has to be formed from 9 boys and 4 girls. In how many ways can this be done when the committee consists of: i) exactly 3 girls ii) atleast 3 girls	504, 588
7	Solve : $5x^2 + (2+5\sqrt{2}i)x + 2\sqrt{2}\, i = 0$	$-2\sqrt{2}\, i, -\frac{2}{5}$
8	Find the square root of 3+4i	$\pm(2 + i)$
9	Find mean deviation about the median:	1.92

x	5	7	8	11	12	15	
f	3	5	9	4	2	2	

Q.No	Questions	Ans
10	In the binomial expansion of $(2x^2 - \frac{3}{x})^{11}$ find i) the coefficient of x^{10} ii) the middle terms.	$(i) 11_{c_4}2^7 3^4$ $(ii) T_6\ and\ T_7$
11	Find the equations of any two medians of the triangle formed by the li$_$ x -3y + 7 =0; 3x +4y -5 = 0 and 4x +y − 11 =0. Find also the centroi the triangle.	$\left(\frac{4}{3}, \frac{4}{3}\right)$

12	Prove: $\left(1 + \cos\frac{\pi}{8}\right)\left(1 + \cos\frac{3\pi}{8}\right)\left(1 + \cos\frac{5\pi}{8}\right)\left(1 + \cos\frac{7\pi}{8}\right) = \frac{1}{8}$.	
13	By using the principle of mathematical induction $prove: 1.3 + 3.5 + 5.7 + \cdots (2n-1)(2n+1) = \dfrac{n(4n^2 + 6n - 1)}{3} \ for \ all \ n \in N.$	
14	Find the value of a for which the coefficients of the middle terms in the expansion of $(1 + ax)^4 \ and \ (1 - ax))^6$ are equal	$-\dfrac{3}{5}$
15	Find the relationship between a and b if coefficient of x^7 in $\left(ax^2 + \dfrac{1}{bx}\right)^{11}$ and coefficient of x^{-7} in $\left(ax + \dfrac{1}{bx^2}\right)^{11}$ are equal.	ab=1
16	If one geometric mean G and two arithmetic means A_1 and A_2 are inserted between two positive numbers, then prove that $(2A_1 - A_2)(2A_2 - A_1) = G^2$	
17	The opposite angular points of a square are (3, 4) and (1, -1). Find the coordinates of the other two vertices.	$\left(-\dfrac{1}{2}, \dfrac{5}{2}\right)$ $\left(\dfrac{9}{2}, \dfrac{1}{2}\right)$
18	Find the equation of the circle passing through the centre of the circle whose equation is $x^2 + y^2 - 6x + 4y + 3 = 0$ and having its centre at the point of intersection of the lines given by the equations $x - y = 1$ and $2x + 3y = 7.$ (Ans: $(x - 2)^2 + (y - 1)^2 = 10$)	
19	Find equation of the ellipse, major axis on the Y axis and passing through (3, 2) and (1, 6). Also find the coordinates of its foci eccentricity and length of latus rectum. (Ans: $\dfrac{x^2}{10} + \dfrac{y^2}{40} = 1$)	
20	Find the equation of a line intersecting y axis at a distance of 4 units above origin and makes an angle 135° with the positive direction of x axis. Also reduce the equation of the line into normal form and find the perpendicular distance from the origin and angle between perpendicular and the positive x axis.	x + y = 4 p=√2 Angle 45⁰

Happy New Year 2019