S.R DAV Public School Pupri

Diwali Chhath vacation Assignment

Sub: Mathematics Class - XI

(1) If $a\sin\theta + b\cos\theta = a\operatorname{cosec}\theta + b\sec\theta$, then the expression $a^2\cos^6\theta + b^2\sin^6\theta + 2ab\sin^3\theta\cos^3\theta$ equals:

(a) 1 (b) a^2b^2 (c) 0 (d) ab

(2) Both A and B throw a dice. The chance the B throws a number not less than that thrown by A is

(a) 1/2 (b) 21/36 (c) 19/36 (d) 15/36

(3) Find the range of the function f defined as $f(x) = \log_5(3x^2 - 4x + 5)$

(4) Given that x is an integer, find the values of x which satisfy both $2x+3 > 7$ and $x+4 < 10$.

(5) Evaluate: $3\left[\sin^4\left(\frac{3\pi}{2} - \alpha\right) + \sin^4(3\pi + \alpha)\right] - 2\left[\sin^6\left(\frac{\pi}{2} + \alpha\right) + \sin^6(5\pi - \alpha)\right]$.

(6) Solve the system of inequalities $2x + 5 \leq 0$, $x - 3 \leq 0$

(7) If $2\tan\alpha = 3\tan\beta$ then find $\tan(\alpha - \beta)$

(a) $\frac{\sin 2\beta}{5 - \cos 2\beta}$ (b) None of these (c) $\frac{\cos 2\beta}{5 - \cos 2\beta}$ (d) $\frac{\sin 2\beta}{5 + \cos 2\beta}$

(8) mark the correct answer for $(1+2i)^{-1} = ?$

(a) $\left(\frac{1}{2}+\frac{1}{2}i\right)$ (b) None of these (c) $\left(\frac{1}{2}-\frac{1}{2}i\right)$

(d) $2-i$

(9) Let $f(x) = \sqrt{x}$ and $g(x) = x$ be two functions defined in the domain $R^+ \cup \{0\}$.

Find $(f-g)(x)$

(10) If $n(A) = 3$ and $n(B) = 5$ find the maximum number of elements in $A \cup B$

(11) Express $\frac{(3-2i)(2+3i)}{(1+2i)(2-i)}$ in the form $a+ib$

(12) Solve the linear inequality $\frac{-3x+10}{x+1} > 0$

(13) Three coins are tossed once. Let A denote the event "three heads show", B denote the event "Two heads and one tail show", D denote the event "a head shown on the first coin and C denote the event "three tails show".

which events are (i) mutually exclusive

(ii) Simple (iii) Compound.

(14) If $A+B+C = \pi$, prove that $\sin^2\frac{A}{2} + \sin^2\frac{B}{2} + \sin^2\frac{C}{2} = 1 - 2\sin\frac{A}{2}\sin\frac{B}{2}\sin\frac{C}{2}$.

(15) prove: $4\sin A \sin(60°-A)\sin(60°+A) = \sin 3A$

(16) Evaluate: $\sin 20° \times \sin 40° \times \sin 60° \times \sin 80° = \frac{3}{16}$

(17) The mean and variance of five observations are 6 and 4 respectively. If three of these are 5, 7 and 9. Find the other two observation.