

MPVM GANGAGURKULAM

HOLIDAY HOMEWORK – CLASS 11

MATHS – TOPIC – SETS ,RELATION FUNCTION & Trigonometry

1. If number of subsets of a set is 3 Find the no. of elements in the set .
2. If $A = \{1,2,3\}$, Find $P(A)$.
3. Draw the graphs of the functions , Signum function, Gratest integer function , Modulas function and Exponential function, Reciprocal function and cubic function .
4. Write the domain and range of the functions given in question no.
5. Find the domain of these functions ,
a). $f(x) = \sqrt{4 - X^2}$
b). $f(x) = \sqrt{(x(x - 1)(x - 2))} / (x + 1)$
c). $f(x) = \sin x$ d). $f(x) = \tan x$ e). $f(x) = \log x$
6. If $y = f(x) = (ab - ax) / (a - bx)$, show that $x = f(y)$.
7. If $2f(x) - 3f(1/x) = x^2$ ($x \neq 0$) , then find $f(2)$.
8. If $f(x) = 2x / (1 + x^2)$, prove that $f(\tan \theta) = \sin 2\theta$.
9. If $f(x) = (x + 1/x)$, prove that $[f(x)]^3 = f(x^3) + 3f(1/x)$.
10. Let $U = \{1, 2, 3, 4, 5, 6\}$, $A = \{2, 3\}$ and $B = \{3, 4, 5\}$.
11. Find A' , B' , $A' \cap B'$, $A \cup B$ and hence show that $(A \cup B)' = A' \cap B'$.
12. Let $U = \{x : x \in \mathbb{N}, x \leq 9\}$; $A = \{x : x \text{ is an even number}, 0 < x < 10\}$; $B = \{2, 3, 5, 7\}$. Write the set $(A \cup B)'$.
13. Let $f = \{(-1,-8), (1,-2), (2,1), \dots\}$ be a function from $\mathbb{Z}$ to $\mathbb{Z}$ defined by $f(x) = px + q$, for some integers p and q . Determine p and q .
14. Let $f : \mathbb{R} \rightarrow \mathbb{R}$ be given by $f(x) = x^2 + 3$, Find (i) $\{x : f(x) = 28\}$ (ii) The pre-images of 39 and 2 under ' f '.
15. Determine the domain and the range of the relation R , where $R = \{(x, x^3) : x \text{ is a prime number less than } 10\}$.
16. Find the domain and range of $f(x) = (x-2)/(x-1)$.
