Assignment No. 01 MTH100 (SPRING 2024)

SOLUTION

(Mr. Mansoor Khurshid's section)

Marks: 20

Q1: Write in builder notation. Marks = 6

SOLUTION

A = Set of first 10 natural number $= \{x \mid x \in N \mid 1 \le x \le 10\}$ Marks = 2

B = Set of positive odd numbers up to 40 $= \{x \mid x \in O \mid 1 \le x \le 40\}$ Marks = 2

C = $\{-2,-1,0,1,2,3\}$ $= \{x \mid x \in Z \mid -3 < x \le -3\}$ Marks = 2

Q2: Find AUB and A∩B for $A = \{2,4,6,8,10,12,14,16\}$ and $B = \{12,13,14,15,16\}$

Marks = 4

SOLUTION

$A \cup B = \{2,4,6,8,10,12,13,14,15,16\}$

$A \cap B = \{12,14,16\}$ Marks = 2+2

Q3: Evaluate $(2+2i)(1-i)$. Marks = 3

SOLUTION

$= (2-2i+2i-2i^2)$

$= (2-2(-1))$

$= 2+2$

$= 4$

Q4: Evaluate $\frac{3+5i}{1+i}$ Marks = 4

SOLUTION

$$= \left(\frac{3+5i}{1+i}\right)\cdot\left(\frac{1-i}{1-i}\right)$$
$$= \frac{3-3i+5i-5i^2}{1-i^2}$$
$$= \frac{3+2i-5(-1)}{1-(-1)}$$
$$= \frac{3+2i+5}{2}$$
$$= \frac{2i+8}{2}$$
$$= \frac{2(i+4)}{2}$$
$$= i+4$$

Q5: Determine from the given graphs whether these functions are even or odd. Give Justification. Marks = 1+1+1

SOLUTION

A. It is an even function as graph is symmetric about the y-axis.
B. It is an even function as graph is symmetric about the y-axis.
C. It is an is odd function as graph is symmetric about the origin.