# 2 Lecture - MTH101

# **Important Subjective**

#### 1. What is the Absolute Value of -10?

Answer: The Absolute Value of -10 is 10.

#### 2. Define the Absolute Value function.

**Answer:** The Absolute Value function is a function that returns the magnitude or distance of a number from zero on the number line, regardless of its sign. It is denoted by f(x) = |x|.

## 3. What is the graph of the Absolute Value function?

**Answer:** The graph of the Absolute Value function is a V-shaped curve with its vertex at the origin.

### 4. Is the Absolute Value function continuous for all real numbers?

Answer: Yes, the Absolute Value function is continuous for all real numbers.

#### 5. What is the derivative of the Absolute Value function?

**Answer:** The derivative of the Absolute Value function is a step function, which changes its value abruptly at x = 0. The derivative of the Absolute Value function is given by f'(x) = -1, for x < 0 and f'(x) = 1, for x > 0.

### 6. What is the limit of the function f(x) = |x| as x approaches 0?

**Answer:** The limit of the function f(x) as x approaches 0 from the left is -0, and the limit of the function as x approaches 0 from the right is 0. Hence, the limit of the function f(x) as x approaches 0 does not exist.

# 7. Is the Absolute Value function differentiable at x = 0?

**Answer:** No. the Absolute Value function is not differentiable at x = 0.

#### 8. What is the distance between points (3, 4) and (-2, 1)?

Answer: The distance between the points (3, 4) and (-2, 1) is given by |3 - (-2)| + |4 - 1| = 5 + 3 = 8.

9. How can we evaluate the integral ?[0, 2] |x - 1| dx?

**Answer:** We can split the integral into two parts ?[0, 1] (1 - x) dx and ?[1, 2] (x - 1) dx, which gives the value of the integral as 1.

10. What is the value of |5 - 7| + |10 - 7|?

**Answer:** The value of |5-7| + |10-7| is 2 + 3 = 5.