## 2 Lecture - MTH101

## Important Subjective

1. What is the Absolute Value of $\mathbf{- 1 0}$ ?

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 $f^{\prime}(x)=-1$, for $x<$ 0 and $f^{\prime}(x)=1$, 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 $\mathbf{x}=\mathbf{0}$ ?

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 ? $[0,2]|x-1| d x$ ?

Answer: We can split the integral into two parts ? $[0,1](1-x) d x$ and ? $[1,2](x-1) d x$, 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 $2+3=5$.

