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| **SESSION** | **NOVEMBER 2024** |
| **PROGRAM** | **MCA** |
| **SEMESTER** | **I** |
| **COURSE CODE & NAME** | **DCA6107 FUNDAMENTALS OF MATHEMATICS** |
|  |  |
|  |  |

**Set-I**

### **1. Find the derivative of using limits**

**Ans 1.**

The derivative using limits is defined as:

For :

**Step 1: Rationalize the numerator**

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### **2. Evaluate**

#### (i)

**Ans 2.**

**Step 1: Simplify the function**

**Step 2: Apply the integral**

The integral of is:

#### (ii)

**Step 1: Expand the function**

### **3. Find and for :**

#### Given function:

#### **Step 1: Partial derivative with respect to ()**

Treat as a constant while differentiating with respect to :

**Calculation:**

1. For :

### **SET-II**

### **4. Find and where, and .**

### **Ans 4. Find and :**

#### Given vectors:

#### **Step 1: Calculate**

First, calculate :

### **5. Express 1 Radian into the degree measurement**

**Ans 5.**

To convert radians into degrees, use the formula:

**6. Find their modulus and amplitude of the following**

**(i) (ii).**

**Ans 6.**

### **Find the modulus and amplitude of the following**

#### **(i)**

#### Step 1: Modulus

The modulus of a complex number is given by:

Here, , so and .

#### Step 2: Amplitude