Assignment (Group 8)
Calculus and Analytical Geometry
Energy and Environment - Batch 15

1. Describe the physical meaning of derivative. Find 10th order derivative of the function

$$y = \cos(x).$$

2. Explain derivative as rate of change. Derivative of constant function is always zero. What do you conclude from this?

3. What is difference between *definite* and *indefinite* integration? What are applications of integration?

4. Solve the following integral

$$\int \frac{\tan(x)}{\sec^4(x)} dx.$$

5. If z is function of independent variables x and y i.e. $z = f(x,y)$, then find $\frac{\partial z}{\partial x}$ and $\frac{\partial z}{\partial y}$ from the implicit function

$$x^2 \sin(2y - 5z) = 1 + y\cos(6zx).$$

6. Solve the double integral

$$\int_{01}^{2} \int_{0}^{1} xe^{xy} dy dx.$$

What do you understand from the result obtained in above double integration?