**Lecture 1: Differential Equations (DE’s) In All Their Glory**

**Name:**

**Lecture Notes-**

Review of Differentiation and Integration Techniques

1. Find the derivative of y = x3 sin(x)

2. Find the derivative of y =

3. Find the derivative of y = ln (sin (e2x))

4. Evaluate

5. Evaluate

6. Evaluate

What are Differential Equations?

Real-Life Models of DE’s

Separable Equations

1. Bacteria Growth:

Initial population = 1000; population doubles every 3 hours

Solve the following DE:

P’ = kP

2. Solve the following DE:

y’ = x2

3. Solve the following DE:

y’ = xy

4. Geometric Applications of DE’s: Pulling Object Problem