

MthU343

Northeastern University

DiffEQs & Linear Alg. for Engineering

30 Minutes

Professor Gilmore

July 3, 2008

Quiz #1

Name: _____.

Show All Your Work

1. Solve the differential equation $xy' = y + 5\sqrt{xy}$.

2. Solve the following differential equation: $xy' + 6y = 3xy^{\frac{4}{3}}$

Please Turn Over and Continue Working

3. A 120-gallon tank contains 90 gallons of brine with 90 pounds of salt dissolved in this mixture. Brine which has two pounds of salt per gallon is flowing into this tank at a rate of four gallons per minute. The solution is thoroughly mixed and exits the tank at a rate of three gallons per minute. How much salt is in the tank when it is full?

4. A pitcher of 25° buttermilk is set out on a 0° porch, where all degrees are in the Centigrade scale. After 20 minutes the buttermilk is at 15° . When will the buttermilk be 5° ?