

MATH 221 (Washington) Second Exam Review Fall 2008

1. Solve $y' = (2t + 3)e^{-y}$, $y(0) = 0$.

2. Solve $y' = t - 2y$, $y(2) = 3$.

3. Sketch the graphs of the solutions to the following differential equations:

(a) $y' = 2y - 3$, $y(0) = 0$.

(b) $y' = -(y - 1)(4 - y)$, $y(0) = 3$.

4. A wet towel dries at a rate proportional to the moisture content. Set up the differential equation whose solution is $y = f(t)$, the amount of water at time t in the the towel.

5. A savings account earns 6% interest per year, compounded continuously, and continuous withdrawals are made from the account at the rate of \$400 per year. Set up a differential equation that is satisfied by the amount $f(t)$ of money that is in the account at time t .

6. Graph the solution to $y' = \sin y$, $y(0) = 1$.

7. Calculate the following: (a) $1.2/.1$ (b) $(2/3) - (1/2)$ (c) $.001 \times 5.9$

The following might be useful:

$$A(t) = \int a(t) dt, \quad y = e^{-A(t)} \left[\int e^{A(t)} b(t) dt + C \right]$$