

Warm-up Problems - March 8, 2006

1. Solve the first order linear differential equation.

1) Write the DE as $y' + f(x)y = g(x)$.

2) Find the integrating factor, $I = e^{\int f(x) dx}$

3) Multiply the differential equation by I .

4) Recognize the product rule in your differential equation.

5) Integrate your DE, solve.

6) Use initial condition.

(a) $P' = 0.05P - 1000, P(0) = 3200$

(b) $y' = \frac{3}{125}y - 0.004e^{0.04t} - 0.04, y(0) = 2$

(c) $y' = 6 - \frac{2y}{50+t}, y(0) = 20.$