

3    ✚    Compute the solutions for the following simple initial value problems:

1.  $\frac{dx}{dt} = 3x$  and  $x(0) = 1$   
 $x = 3xt + 1$

2.  $\frac{dx}{dt} = 3tx$  and  $x(0) = 4$   
 $x = 4e^{\frac{3}{2}t^2}$

3.  $\frac{dx}{dt} = 1x - .003x^2$  and  $x(0) = 4$   
 $x = \frac{1}{.003 - .247e^{-t}} = \frac{e^t}{.003e^t - .247}$

4.  $\frac{dx}{dt} = 1x - .003x^2$  and  $x(0) = 400$   
 $x = \frac{e^t}{.003e^t - .0005}$