1. Consider the curve \( y(x) \) to the differential equation \( y' = 1 + xy^2 \) that goes through the point \((1, 1)\).
   
   (a) Is \( y = 1 + x^2 \) a solution to this differential equation?
   
   (b) Use Euler’s method with two steps (and a step size of \( h = .1 \)) to approximate \( y \) when \( x = 1.2 \).
2. Rabbits in Madison have a birth rate of 5% per year and a death rate from old age of 2% per year. Each year 1000 rabbits get run over and 700 rabbits move in from Sun Prairie.

(a) Write down the differential equation that describes Madison’s rabbit population at time $t$.

(b) Find the general solution to this differential equation.

3. **Bonus:** I want to read a good book over spring break. What do you recommend?