Lesson 34 Worksheet: Exponential Growth

April 20, 2018

- 1. Given $\frac{dy}{dt} = 2y$ and y(0) = 350, find y(8).
- 2. Given $\frac{dy}{dt} = 2y$ and y(2) = 350, find y(10).
- 3. A population of hares has rate of change P'(t) = kP (where k is the growth rate and t is in years). If the population after a year is 100 and the population after 2 years is 1000, what is the population after 3 years?
- 4. Fill in the following table (assume interest is compounded continuously):

Initial Amount	Interest Rate	Time to Double	Amount after 10 years
\$1,000	5%		
\$1,000		20 years	
\$1,000			\$2,500
	5%		\$2,500
		20 years	\$2,500

- 1. $350e^{16} \approx 3, 198, 999, 787$
- 2. $350e^{16} \approx 3, 198, 999, 787$
- 3. 10,000
- 4.

Initial Amount	Interest Rate	Time to Double	Amount after 10 years
\$1,000	5%	13.86 years	$$1,\!648.72$
\$1,000	3.47%	20 years	\$1,414.21
\$1,000	9.16%	7.56 years	\$2,500
\$1,516.33	5%	13.86 years	\$2,500
\$1,767.77	3.47%	20 years	\$2,500