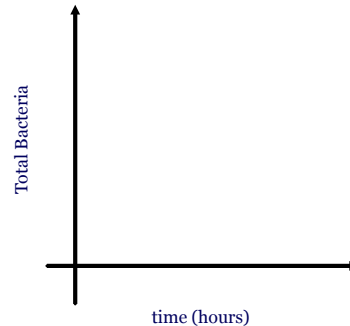




Chapter 5.1: Exponential Growth

Consider a culture of 10 bacteria that is placed into a petri dish. The bacteria is expected to grow at a rate of 4.7% each hour.

Recursive Sequence:



Annual Compounding

Example) \$1000 is invested into an account earning 6% annual interest. How much will be in the account after 5 years?

Example) The value of an antique ring is said to increase by 8% each year. If the ring was purchased in 1940 for \$12, what is the value of the ring today (2019)?



Banks also offer interest compounded multiple times per year, or n times per year.

Compounding n times per year

You invest \$1000 earning 6% interest compounded quarterly.
How much will you have after 5 years?

What is the n value if the interest was compounded.....

Yearly:

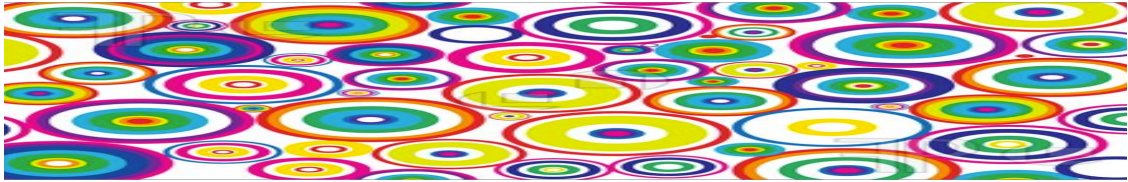
Monthly:

Weekly:

Daily:

What happens if you compound interest continuously?

Open an Excel file to explore!



Continuous Compounding

You invest \$1000 earning 6% interest compounded continuously. How much will you have after 5 years?

At present, the Population of Gambia is about 2.05 million people. The population is growing at a rate of 3.22% compounded annually. If the population continues to grow at this rate what will the population of Gambia be in 10 years?



What if the population was growing at a rate compounded continuously? How different would be the approximate population be?