Lesson 2.5.1: Analyzing Exponential Functions

By the end of this lesson, I will be able to answer the following questions…

1. How do I interpret exponential functions in the form $f(t)=a(1+r)^t$?

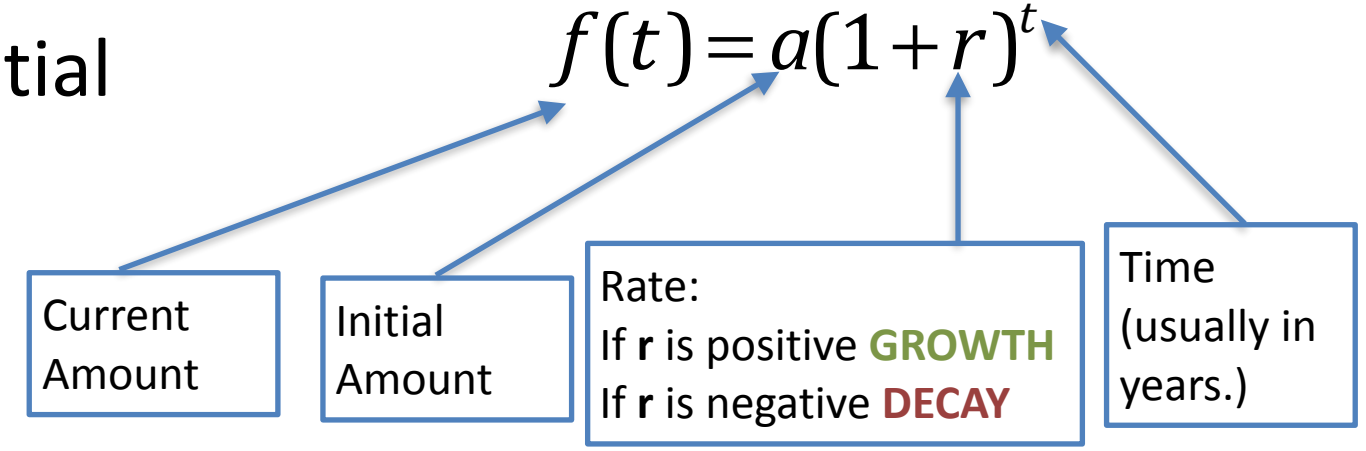
2. What is Growth and Decay and how do I determine it?

3. How do I apply these properties in real life?

Vocabulary

1. Exponential Model.

$$f(t) = a(1+r)^t$$



Prerequisite Skills with Practice

Using the Power to a Power Property

Rewrite the following such that the variable is the only exponent

$(12)^{3t} \rightarrow$

$(4)^{-2t} \rightarrow$

Coverting percents to decimals

$3.6\% \rightarrow$

Coverting decimals to percents

$.023 \rightarrow$

Find the percent rate of change of f(t) for each unit of t. State whether the function shows exponential growth or decay.

$$f(t) = 200(1.078)^t$$

$$f(t) = 1500(.873)^{5t}$$

A town has had a nasty outbreak of zombie hamsters! The town's population the year 2000 was 4000 people. The population "t" years after the year 2000 can be found using the function:

$$f(t) = 4000(0.96)^t$$

That said, what is the town's approximate population 2002? 2005? 2015?

What is the Decay or Growth rate of the town's population?

A number of bacteria, *f(t),* at any time *t,* in hours, can be estimated using the function

$$f(t) = 3000(1.24)^t$$

- **What was the initial size of the bacteria colony?**

- **Is the bacteria population exponentially decaying or growing?**

- **Another Bacteria is measured against the bacteria mentioned above. It can be estimated by the function**

$$f(t) = 3000(1.10)^{2t}$$

Which bacteria is changing faster? How can you tell?

THE END

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