ALGEBRA 1

Chapter 8, Section 5
Exponential Growth Functions

VOCABULARY:

- Exponential Growth –

GOALS:

- Write and use models for exponential growth.
- Graph models for exponential growth.

EXPONENTIAL GROWTH MODEL

C is the initial amount, t is the time period

$$y = C(1+r)^t$$

$(1+r)$ is the growth factor where r is the growth rate.

The percent of increase is $100r$.

1. Finding the balance in an account:

You deposit \$500 in an account that pays 8% annual interest compounded annually. What is the account balance (A) after 6 years?

$A = C(1+r)^t$	Write exponential growth model.
$A = 500(1+0.08)^6$	Substitute $C = 500,\ r = 0.08,\ t = 6$
$A = 500(1.08)^6$	Simplify
$A = 500(1.58687)$	Simplify
$A \approx \$793.44$	Evaluate

2. Writing an Exponential Growth Model:

A population of 20 rabbit is released into a wild-life region. The population triples each year for 5 years. What is the population (P) after 5 years?

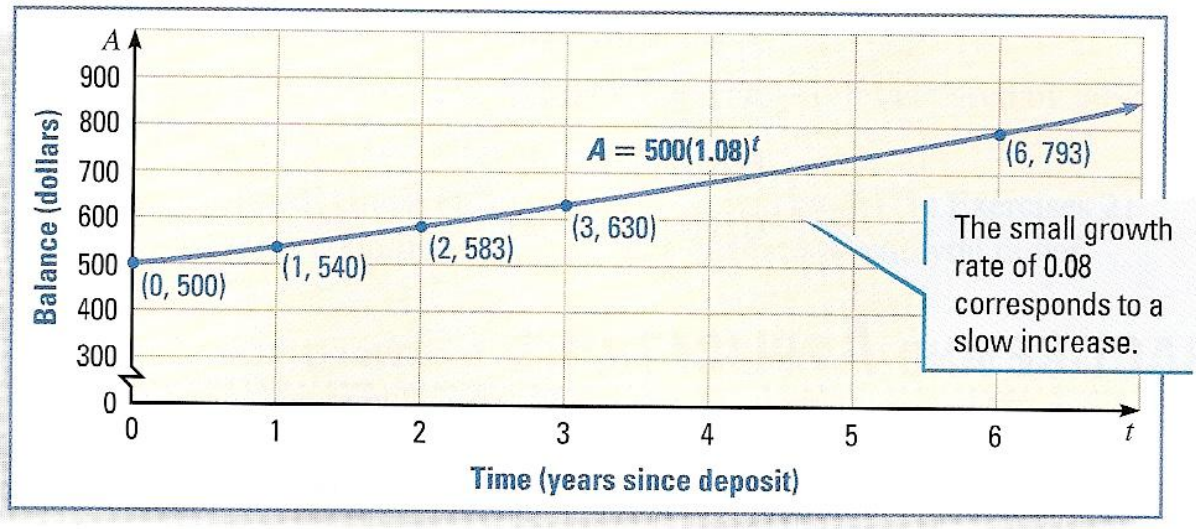
$P = C(1+r)^t$	Write exponential growth model.
$P = 20(1+2)^5$	Substitute $C = 20,\ r = 2,\ t = 5$
$P = 20(3)^5$	Simplify
$P = 20 \bullet 243$	Simplify
$P = 4860$	Evaluate

So there will be about 4860 rabbits after 5 years.

3. Graph the balance in an account:

SOLUTION

Use the values found in Method 1 of Example 1 to plot points in a coordinate plane. Then, draw a smooth curve through the points.



4. Graph an Exponential Growth Model:

SOLUTION

Make a table of values, plot the points in a coordinate plane, and draw a smooth curve through the points.

t	0	1	2	3	4	5
P	20	60	180	540	1620	4860