

Algebra I

Notes Section 7.5

Write and Graph Exponential Decay Functions

Big Ideas

1. How to write a rule for an exponential decay function.
2. How to graph an exponential decay function.
3. How to compare graphs of exponential functions.
4. How to determine the domain and range of an exponential function.

VOCABULARY

exponential function: _____

exponential decay: _____

Compound Interest: _____

a : _____

r : _____

t : _____

$(1 - r)$: _____

EXAMPLE 1 Write a rule for the function.

a) x-coord: _____

y-coord: _____

Find a when $x = 0$: _____

		+ 1	+ 1	+ 1
x	-1	0	1	2
y	$\frac{1}{9}$	$\frac{1}{3}$	1	3
		$\times 3$	$\times 3$	$\times 3$

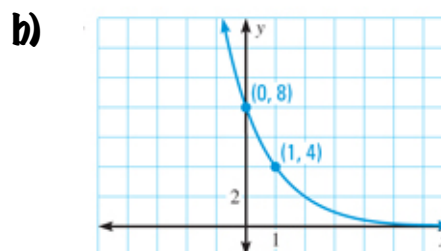
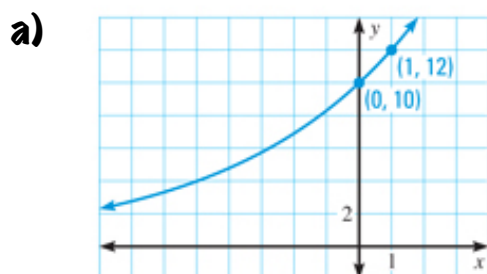
b) x-coord: _____

y-coord: _____

Find a when $x = 0$: _____

		+ 1	+ 1	+ 1
x	-1	0	1	2
y	4	1	$\frac{1}{4}$	$\frac{1}{16}$
		$\times \frac{1}{4}$	$\times \frac{1}{4}$	$\times \frac{1}{4}$

EXAMPLE 4 Tell whether the graph represents exponential growth or exponential decay. Then write a rule for the function.



EXAMPLE 5 The number of acres of Ponderosa pine forests decreased in the western US from 1963 to 2002 by 0.5% annually. In 1963 there were about 41 million acres of Ponderosa pine forests.

a) Write a function

b) To the nearest tenth, about how many million acres of Ponderosa pine forests were there in 2002?