

# Algebra I

## Notes Section 74

### Write and Graph Exponential Growth Functions

#### Big Ideas

1. How to write a rule for an exponential growth function.
2. How to graph an exponential growth 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 growth: \_\_\_\_\_

Compound Interest: \_\_\_\_\_

a: \_\_\_\_\_

r: \_\_\_\_\_

t: \_\_\_\_\_

(1 + r): \_\_\_\_\_

#### EXAMPLE 1 Write a rule for the function.

a) x-coord: \_\_\_\_\_

x	-2	-1	0	1	2
y	2	4	8	16	32

y-coord: \_\_\_\_\_

Find a when  $x = 0$ : \_\_\_\_\_

b) x-coord: \_\_\_\_\_

x	-2	-1	0	1	2
y	3	9	27	81	243

y-coord: \_\_\_\_\_

Find a when  $x = 0$ : \_\_\_\_\_

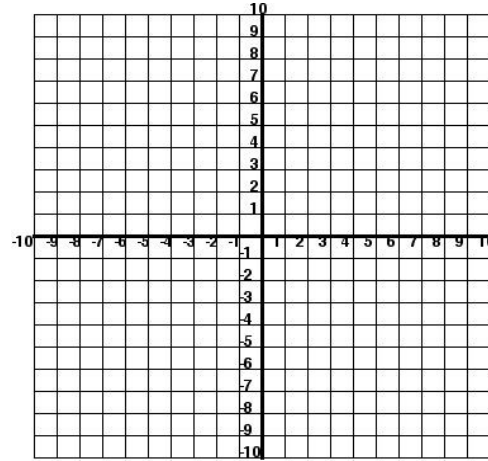
**EXAMPLE 2** Graph the function. Identify its domain and range.

$y = 2^x$

x	y

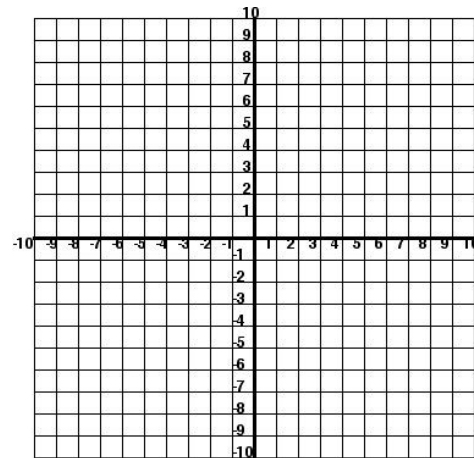
Domain:  
\_\_\_\_\_

Range:  
\_\_\_\_\_



**EXAMPLE 3** Graph the functions  $y = 3 \cdot 2^x$  and  $y = -3 \cdot 2^x$ . Compare each graph with the graph of  $y = 2^x$ .

x	$y = 2^x$	$y = 3 \cdot 2^x$	$y = -3 \cdot 2^x$



\_\_\_\_\_

\_\_\_\_\_

**EXAMPLE 4** The owner of a 1953 Hudson Hornet convertible sold the car at an auction. The owner bought it in 1984 when its value was \$1,000. The value of the car increased at a rate of 6.9% per year.

a) Write a function

b) The auction took place in 2004. What was the approximate value of the car at the time of the auction? Round your answer to the nearest dollar.

**EXAMPLE 5** You put \$250 in a savings account that earns 4% annual interest compounded yearly. You do not make any deposits or withdrawals. How much will your investment be worth in 5 years?