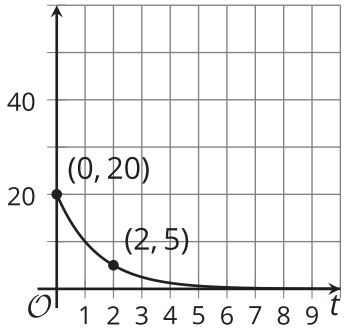
Lesson 13: Representations of Exponential Functions

- Let's get information about a function from its graph.

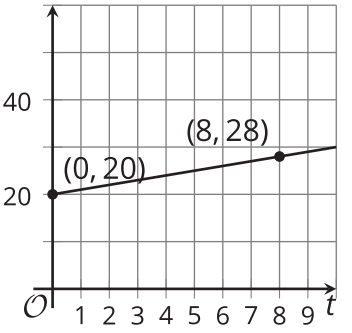
13.1: Which One Doesn't Belong?: Representations of Functions

Which one doesn't belong?

A

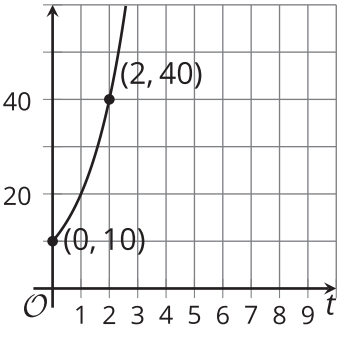


B



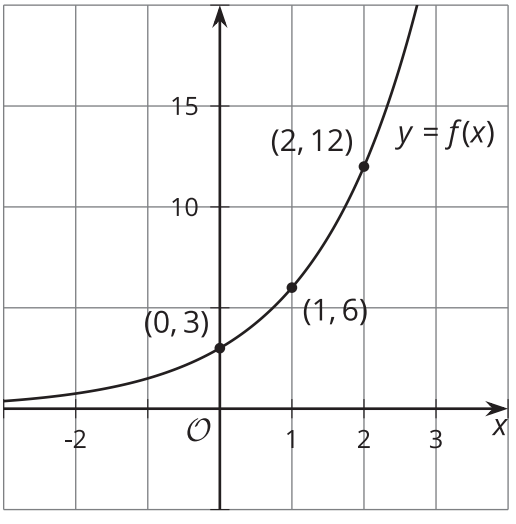
C: $f(t) = 20 \cdot 2^t$

D



13.2: Interrogating Function Representations

1. Consider the graph of $f(x) = 3 \cdot 2^x$ and corresponding table.



x	$f(x)$
0	3
1	6
2	12

a. Using the first two points, what is the growth factor?

b. Using the second two points, what is the growth factor?

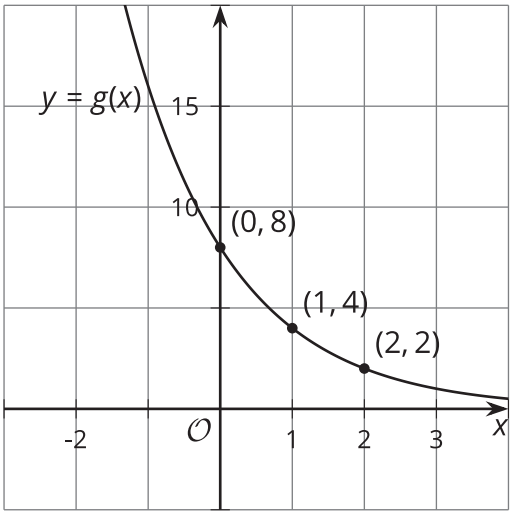
c. Where do you see this growth factor in the equation?

d. Where do you see the growth factor on the graph?

e. What is the vertical intercept of the graph?

f. How can you tell from the equation that this is the vertical intercept?

2. Consider the graph of $g(x) = 8 \cdot \left(\frac{1}{2}\right)^x$ and corresponding table.



x	$g(x)$
0	8
1	4
2	2

a. Using the first two points, what is the growth factor?

b. Using the second two points, what is the growth factor?

c. Where do you see this growth factor in the equation?

d. Where do you see the growth factor on the graph?

e. What is the vertical intercept of the graph?

f. How can you tell from the equation that this is the vertical intercept?

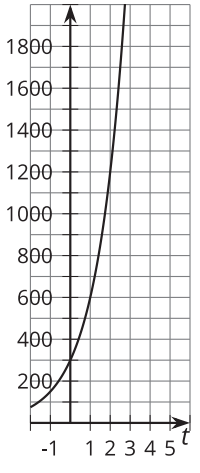
13.3: Matching Representations of Exponential Functions

1. Match each function with the graph that represents it.

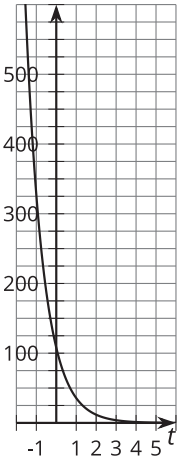
$a(t) = 300 \cdot 2^t$ $b(t) = 300 \cdot 3^t$ $c(t) = 300 \cdot \left(\frac{1}{2}\right)^t$ $d(t) = 300 \cdot \left(\frac{1}{3}\right)^t$

$e(t) = 108 \cdot 2^t$ $f(t) = 108 \cdot 3^t$ $g(t) = 108 \cdot \left(\frac{1}{2}\right)^t$ $h(t) = 108 \cdot \left(\frac{1}{3}\right)^t$

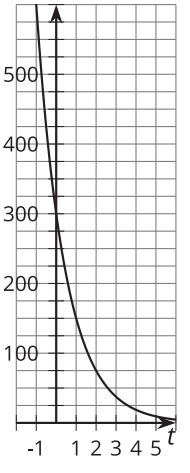
graph 1



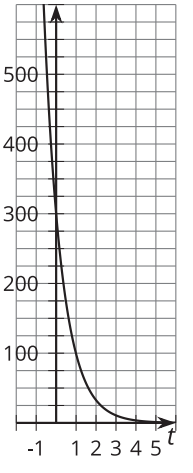
graph 2



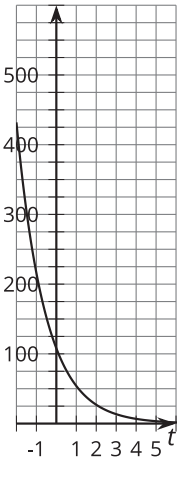
graph 3



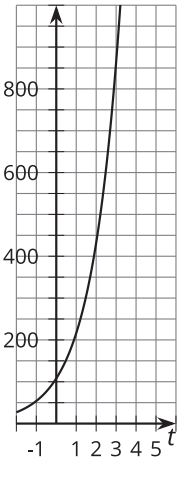
graph 4



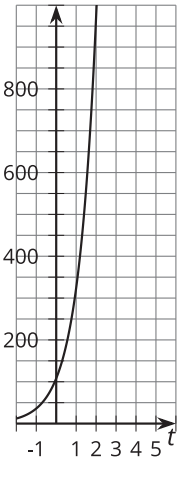
graph 5



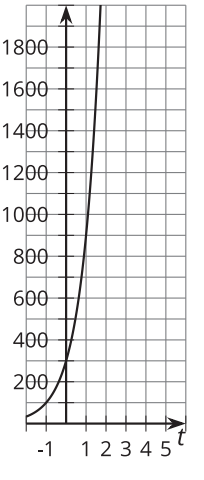
graph 6



graph 7



graph 8



2. On two of the graphs, show where you can see the vertical intercept: 108 and 300.

3. On four of the graphs, show where you can see the growth factor: $\frac{1}{3}$, $\frac{1}{2}$, 2, and 3.