

Exponential Growth & Decay Class Examples

Date _____ Period _____

Find the next three terms in each sequence.

1) 1, 9, 25, 49, 81, _____, _____, _____

2) -2, -6, -18, -54, -162, _____, _____, _____

3) 34, 43, 52, 61, 70, _____, _____, _____

4) 243, 81, 27, 9, 3, ...

A pattern of numbers is called an Arithmetic Sequence if each term is the result of a constant number being added to the term before it.

A pattern of numbers is called a Geometric Sequence if each term is the result of a constant number being multiplied to the term before it.

5) Determine whether each of the above sequences is Arithmetic, Geometric, or Neither.

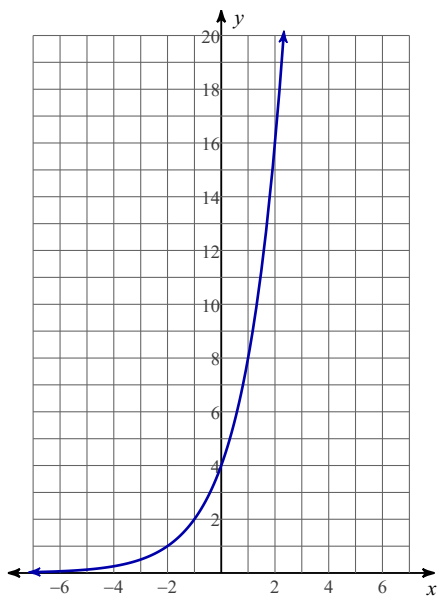
6) A population of rabbits is expected to double in size each year. If there are 24 rabbits right now, how many rabbits will there be in 4 years?

7) Shoshana has an underinflated basketball. When she dropped the ball from 72 inches, the first bounce was 36 inches. The ball reached 18 inches on the second bounce.

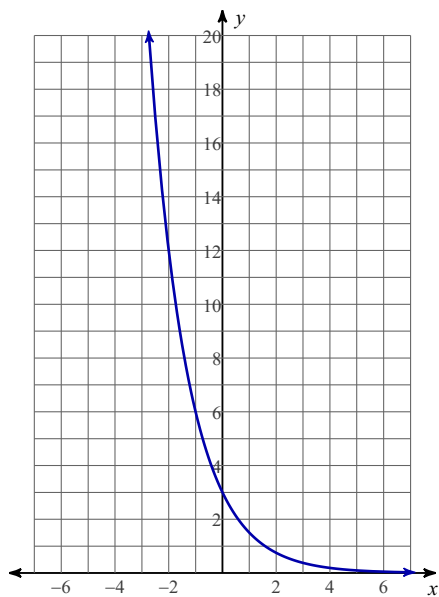
- Find the pattern for the bounce heights.
- How high would the ball get after the 5th bounce?

Write an equation for each graph.

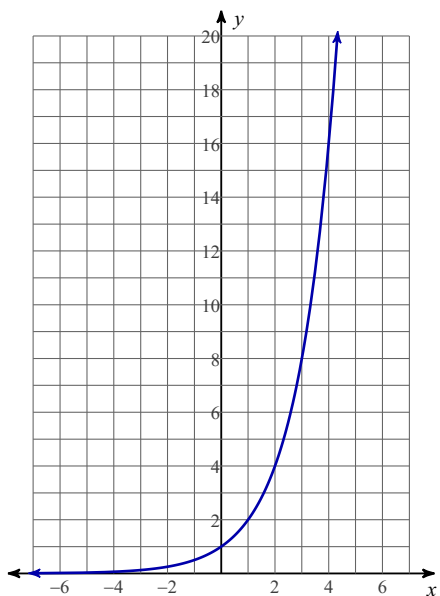
8)



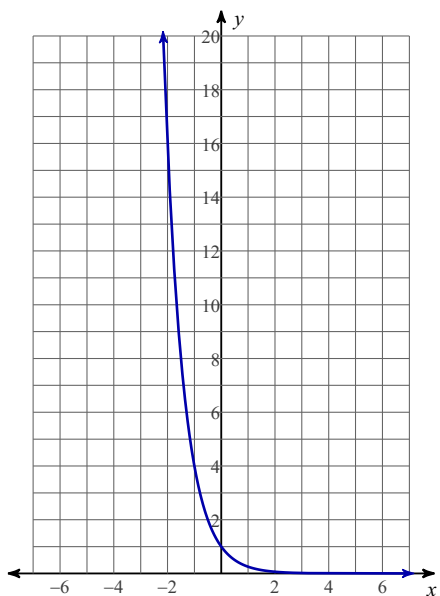
9)



10)

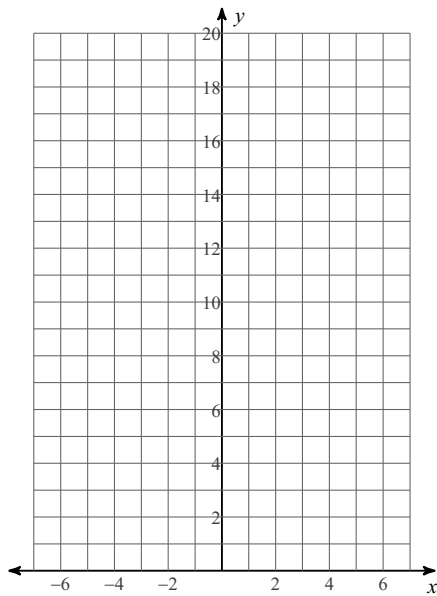


11)

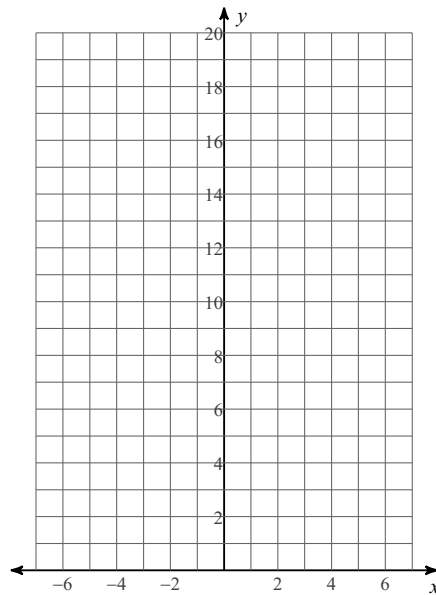


Lets look at the graphs of some exponential Functions: Sketch the graph of each function.

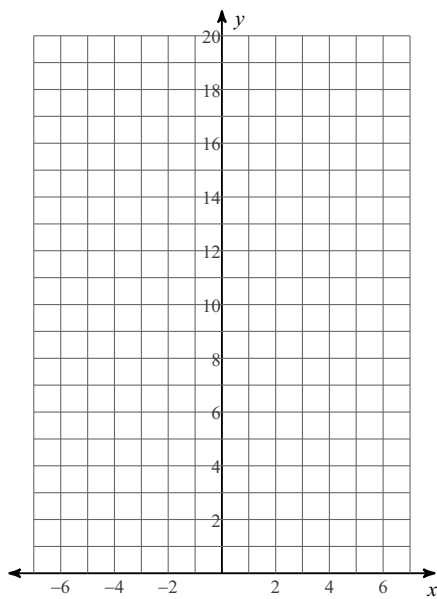
12) $f(x) = 3 \cdot 2^x$



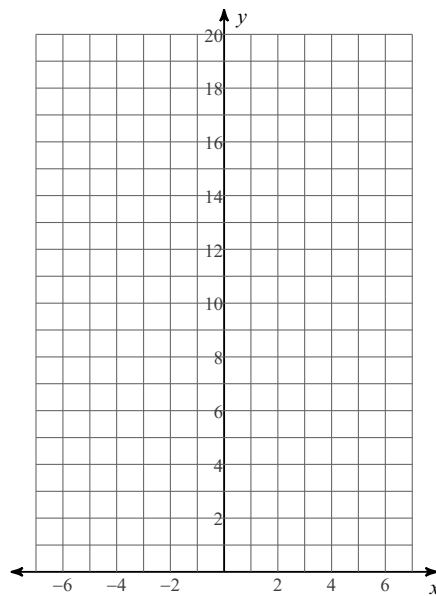
13) $f(x) = 4 \cdot \left(\frac{1}{2}\right)^x$



14) $f(x) = 3^x$



15) $f(x) = \left(\frac{1}{2}\right)^x$



- 16) Mr. Clayton is hoping to expand the Vocal Department. He is planning to accept enough students to make the department 5% bigger each year. This year, there are 325 vocal students.
- a) Write an equation that will predict how many students there will be in x years, as long as Mr. Clayton continues with his plan.

 - b) How many students will Mr. Clayton have in 4 years?

 - c) If he the plan continued, how many students would Mr. Clayton have in 2 decades?

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Find the next three terms in each sequence.

1) 1, 9, 25, 49, 81, _____, _____, _____
 121, 169, 225

2) -2, -6, -18, -54, -162, _____, _____, _____
 -486, -1458, -4374

3) 34, 43, 52, 61, 70, _____, _____, _____
 79, 88, 97

4) 243, 81, 27, 9, 3, ...
 1, $\frac{1}{3}$, $\frac{1}{9}$

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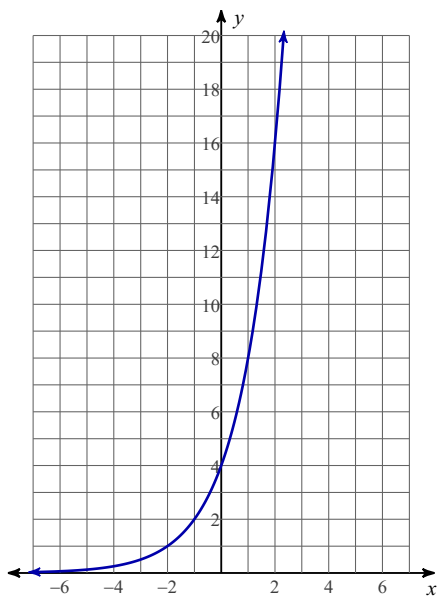
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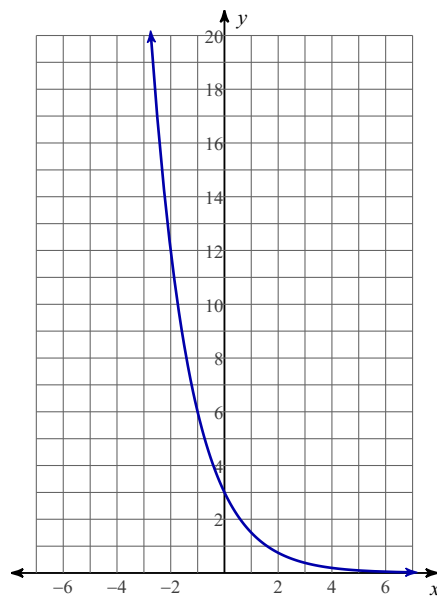
Write an equation for each graph.

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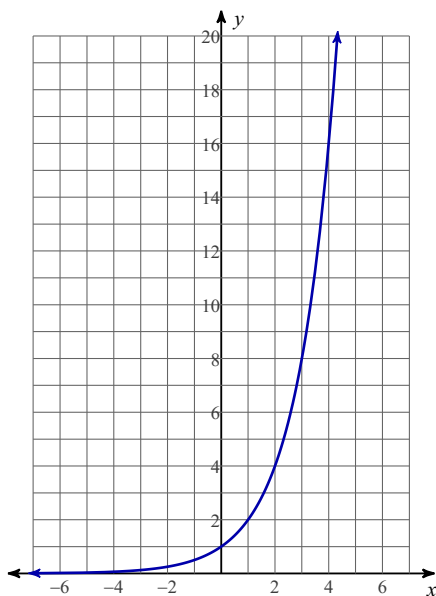
$$y = 4 \cdot 2^x$$

9)



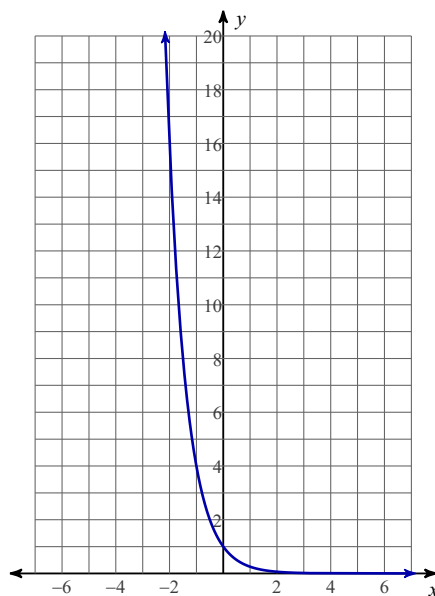
$$y = 3 \cdot \left(\frac{1}{2}\right)^x$$

10)



$$f(x) = 2^x$$

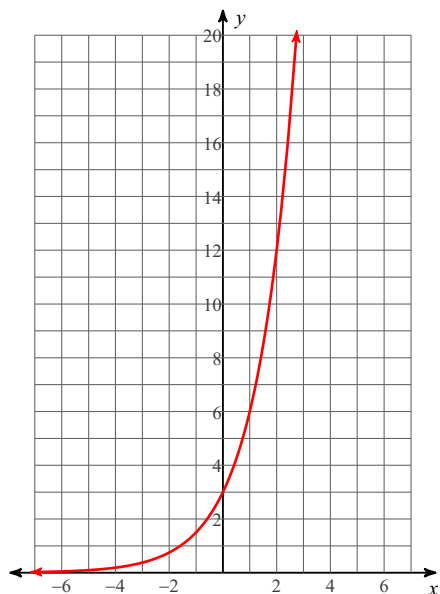
11)



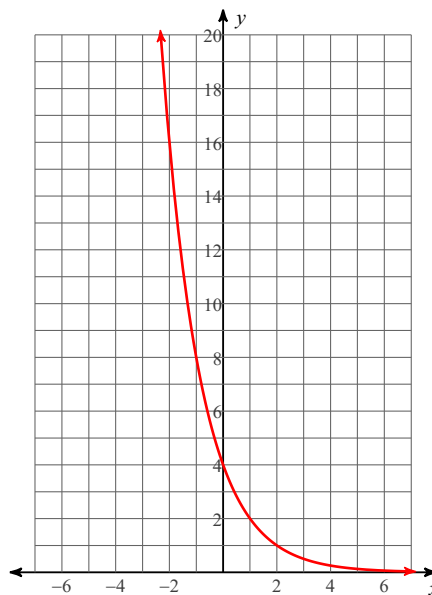
$$f(x) = \left(\frac{1}{4}\right)^x$$

Lets look at the graphs of some exponential Functions: Sketch the graph of each function.

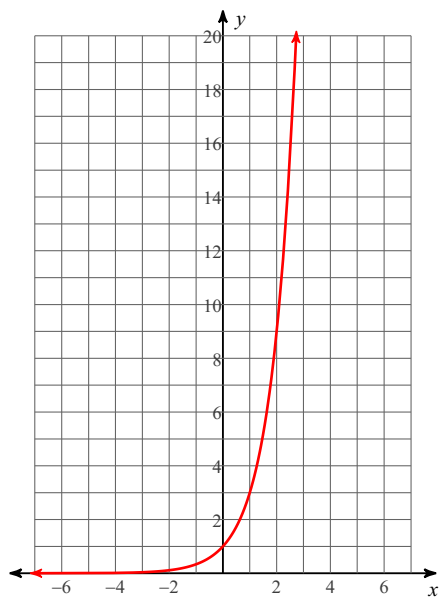
12) $f(x) = 3 \cdot 2^x$



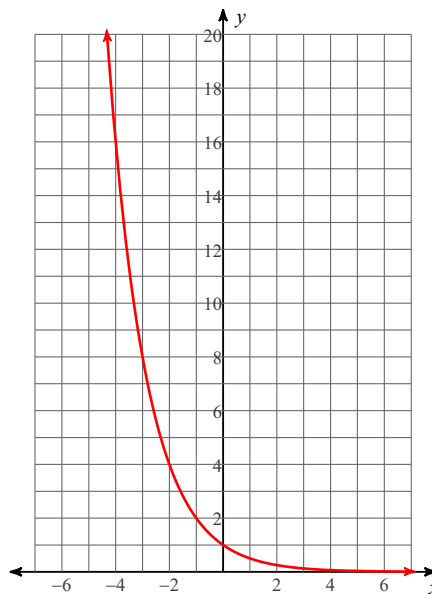
13) $f(x) = 4 \cdot \left(\frac{1}{2}\right)^x$



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