

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) 486, 162, 54, 18, 6, _____, _____, _____

ARITHMETIC sequences involve repeatedly **ADDING** the same number.**GEOMETRIC** sequences involve repeatedly **MULTIPLYING** by the same number.

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

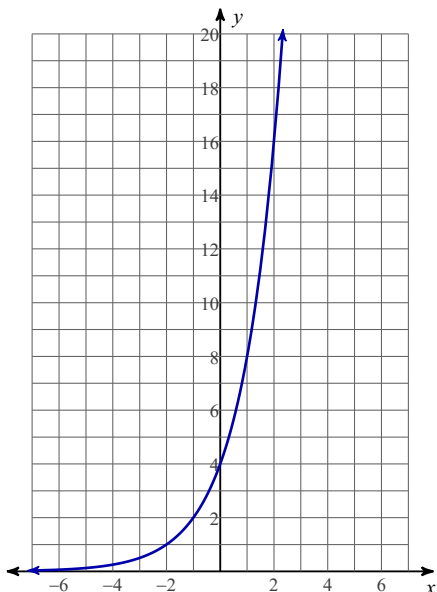
Exponential Growth and Decay:

- 6) 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?

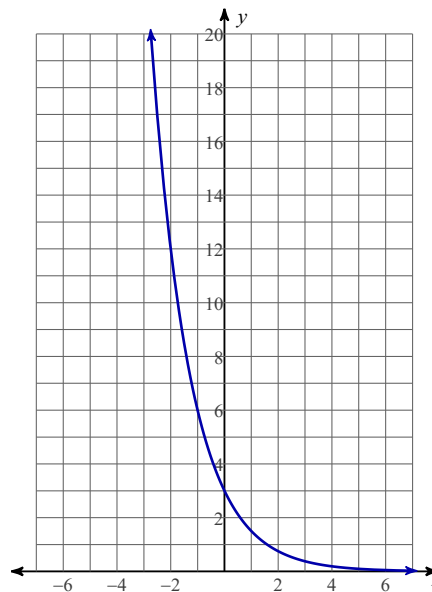
- 7) A population of rabbits is expected to double in size each year. If there are 24 rabbits right now, how many rabbits will there be in 4 years?

Write an equation for each graph.

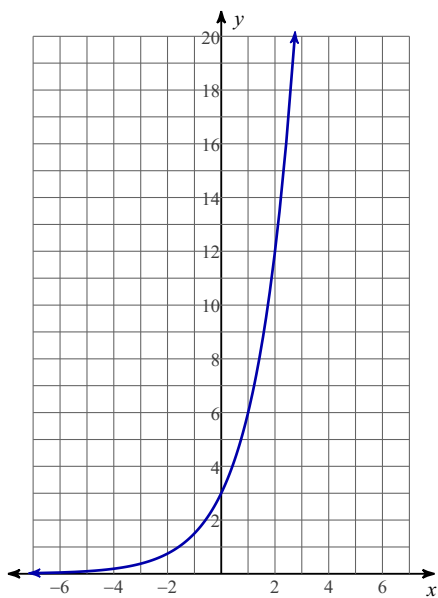
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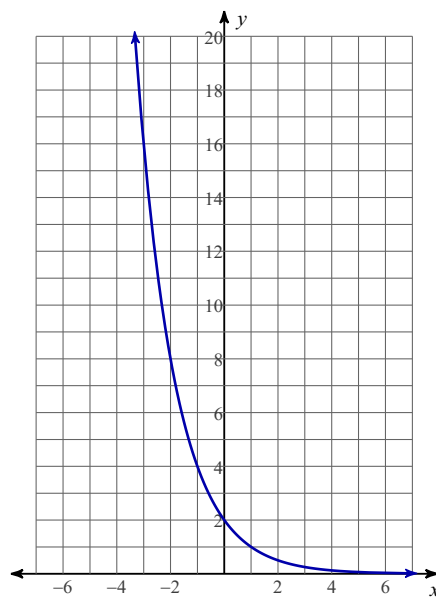
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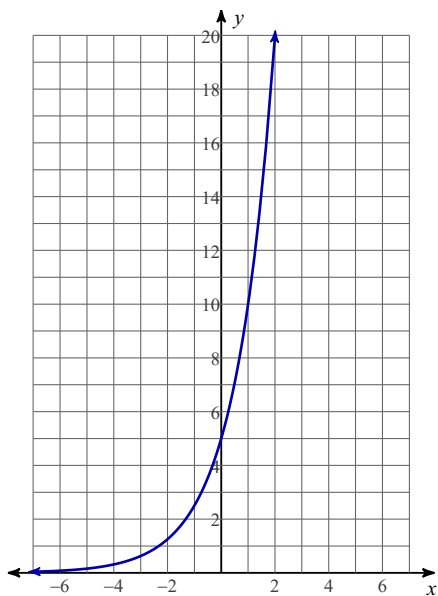
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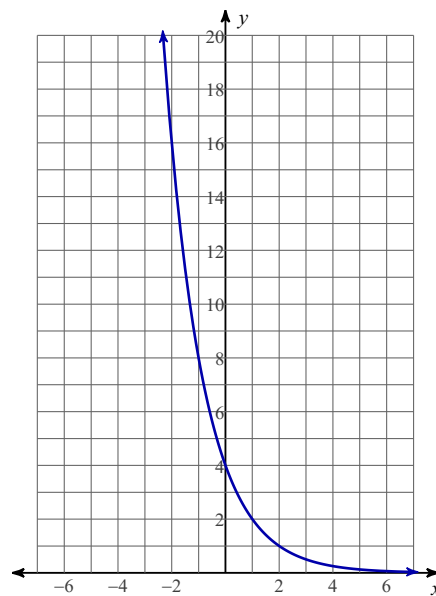
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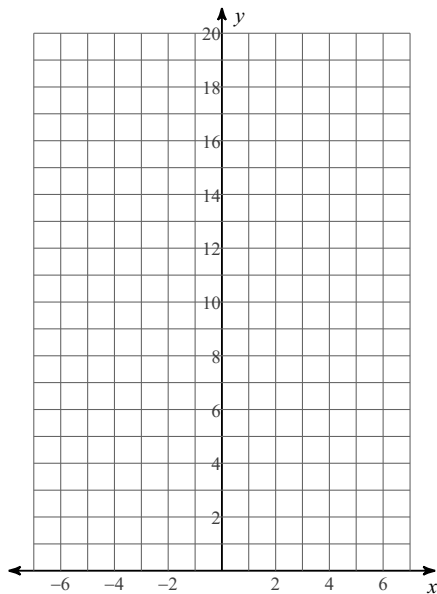


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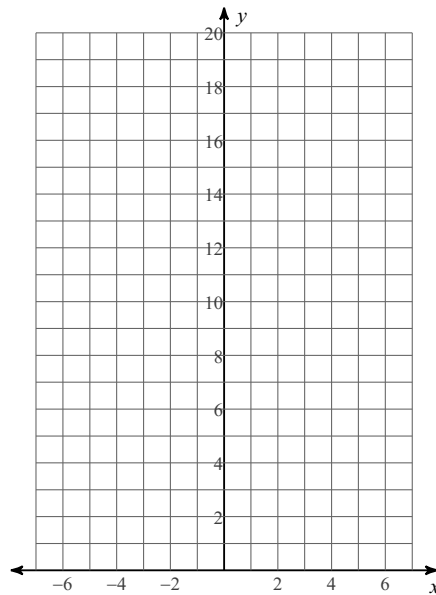


Lets look at the graphs of some exponential Functions: Sketch the graph of each function.

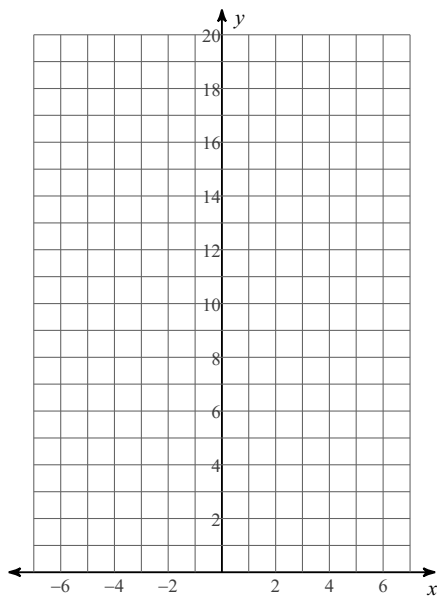
14) $f(x) = 2 \cdot 3^x$



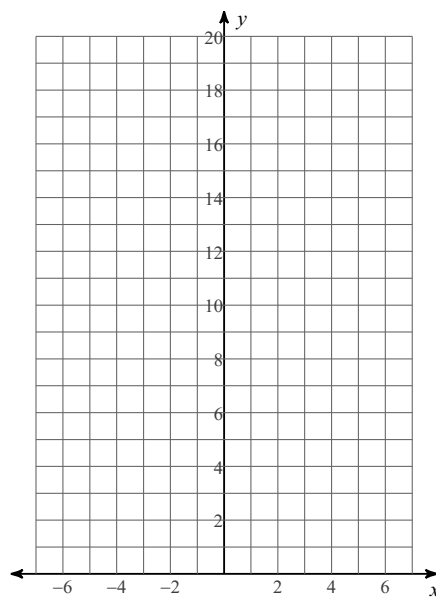
15) $f(x) = 3 \cdot \left(\frac{1}{2}\right)^x$



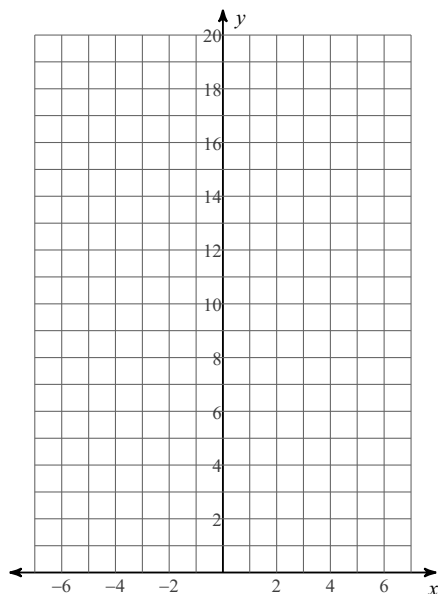
16) $f(x) = 5 \cdot 2^x$



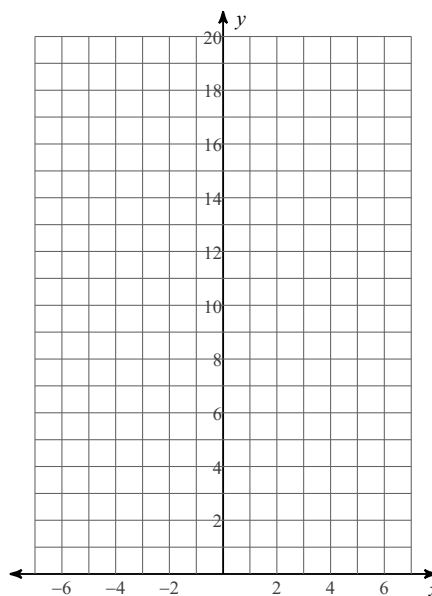
17) $f(x) = 2 \cdot \left(\frac{1}{2}\right)^x$



18) $f(x) = 4 \cdot 2^x$



19) $f(x) = \frac{1}{4} \cdot 2^x$



20) Mr. Clayton is hoping to expand the Vocal Department. He is planning to accept enough students to make the department 5% bigger each year. (To increase by 5% or 0.05, we would multiply by 1.05.) 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?

Answers to Exponential Growth & Decay Class Examples (ID: 1)

1) 121, 169, 225

2) -486, -1458, -4374

3) 79, 88, 97

4) $2, \frac{2}{3}, \frac{2}{9}$

5)

6)

7)

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

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

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

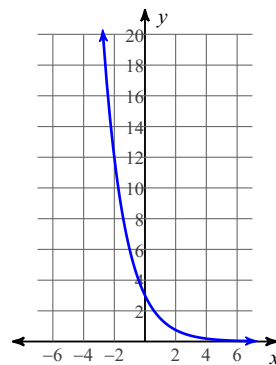
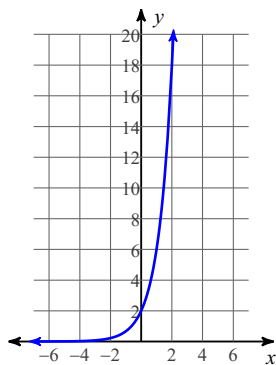
11) $f(x) = 2 \cdot \left(\frac{1}{2}\right)^x$

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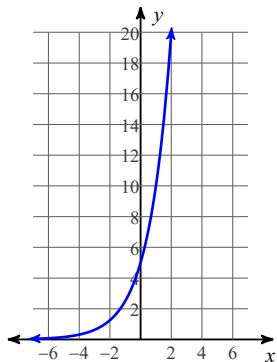
13) $f(x) = 4 \cdot \left(\frac{1}{2}\right)^x$

14)

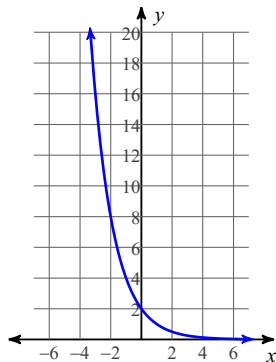
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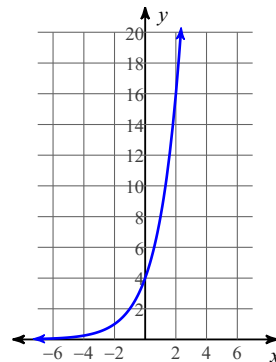
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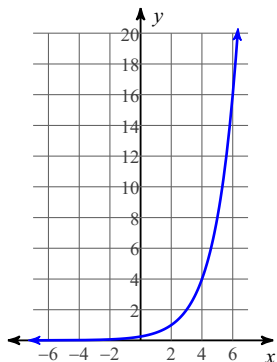
17)



18)



19)



20)