

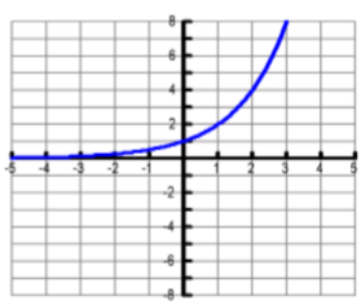
**What am I learning today?**

**Exponential Functions**  
Parent Function  
  
Exponential Growth/Decay

Exponential Function (Parent Function)       $f(x) = a \cdot b^{x-h} + k$   
  
Exponential **Growth**:  $b > 1$   
  
Exponential **Decay**:  $0 < b < 1$  ("b" is between 0 and 1)

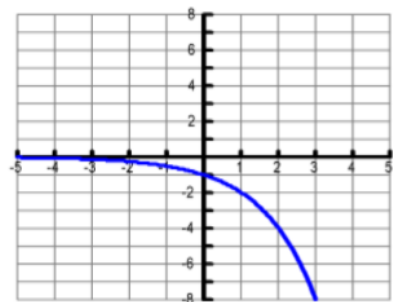
**Exponential Growth**  
  
 $b > 1$

Exponential Growth:  $b > 1$   
 $f(x) = ab^{x-h} + k$



D:  
R:  
interval:  
end behavior:  
 $x \rightarrow -\infty, y \rightarrow \underline{\hspace{2cm}}$   
 $x \rightarrow \infty, y \rightarrow \underline{\hspace{2cm}}$

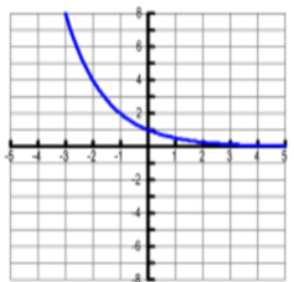
$f(x) = -ab^{x-h} + k$



D:  
R:  
interval:  
end behaviors:  
 $x \rightarrow -\infty, y \rightarrow \underline{\hspace{2cm}}$   
 $x \rightarrow \infty, y \rightarrow \underline{\hspace{2cm}}$

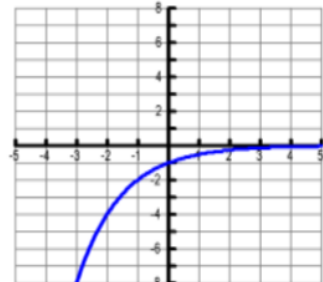
**Exponential Decay**  
  
 $0 < b < 1$

Exponential Decay:  $0 < b < 1$   
 $f(x) = ab^{x-h} + k$



D:  
R:  
interval:  
end behavior:  
 $x \rightarrow -\infty, y \rightarrow \underline{\hspace{2cm}}$   
 $x \rightarrow \infty, y \rightarrow \underline{\hspace{2cm}}$

$f(x) = -ab^{x-h} + k$



D:  
R:  
interval:  
end behavior:  
 $x \rightarrow -\infty, y \rightarrow \underline{\hspace{2cm}}$   
 $x \rightarrow \infty, y \rightarrow \underline{\hspace{2cm}}$

**Topic:** Graphing Exponential Functions

**Examples**

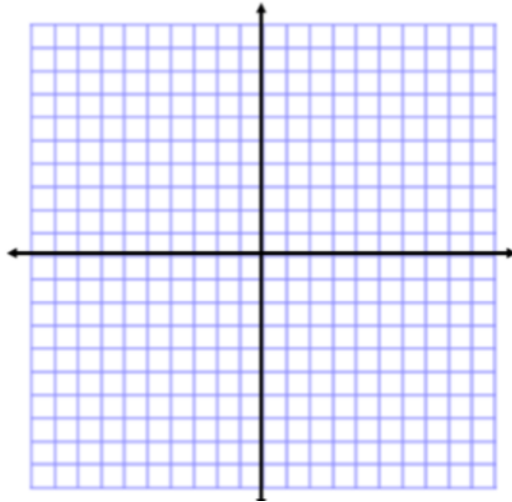
1.  $y = 4 \bullet 2^{x-3} - 1$   
Growth OR Decay

domain: \_\_\_\_\_

range: \_\_\_\_\_

interval of \_\_\_creasing: \_\_\_\_\_

end behavior:  $x \rightarrow -\infty, y \rightarrow$  \_\_\_\_\_  
 $x \rightarrow \infty, y \rightarrow$  \_\_\_\_\_



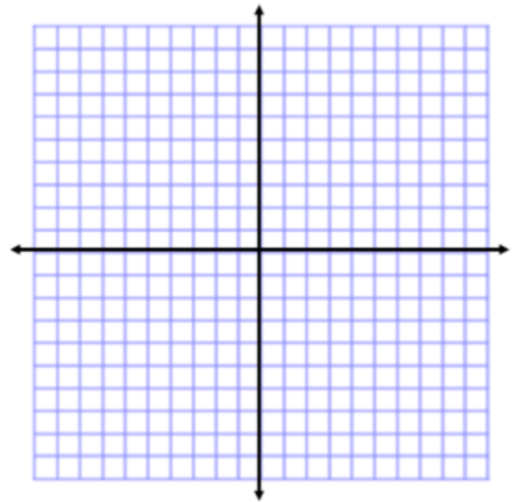
2.  $y = -\left(\frac{1}{5}\right)^x - 4$   
Growth OR Decay

domain: \_\_\_\_\_

range: \_\_\_\_\_

interval of \_\_\_creasing: \_\_\_\_\_

end behavior:  $x \rightarrow -\infty, y \rightarrow$  \_\_\_\_\_  
 $x \rightarrow \infty, y \rightarrow$  \_\_\_\_\_



**You Try**

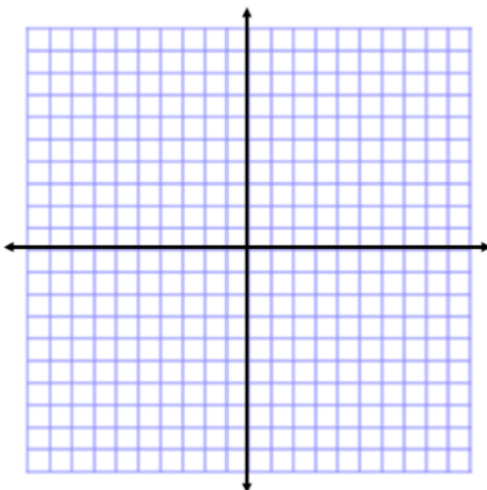
3)  $y = -\frac{1}{3} \bullet 3^x + 4$   
Growth OR Decay

domain: \_\_\_\_\_

range: \_\_\_\_\_

interval of \_\_\_creasing: \_\_\_\_\_

end behavior:  $x \rightarrow -\infty, y \rightarrow$  \_\_\_\_\_  
 $x \rightarrow \infty, y \rightarrow$  \_\_\_\_\_



4)  $f(x) = \frac{1}{4} \bullet 8^{x+2} - 3$   
Growth OR Decay

domain: \_\_\_\_\_

range: \_\_\_\_\_

interval of \_\_\_creasing: \_\_\_\_\_

end behavior:  $x \rightarrow -\infty, y \rightarrow$  \_\_\_\_\_  
 $x \rightarrow \infty, y \rightarrow$  \_\_\_\_\_

