

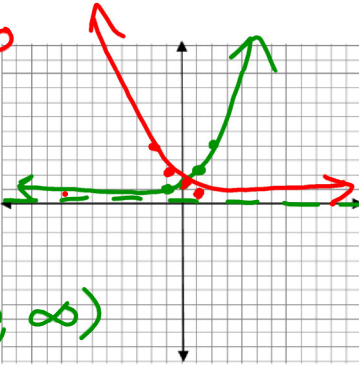
p. 24-25 Graph Exponential Functions Sec. 7.2

Target 2- I can graph exponential decay functions.

Let's look at the relationship between the functions $y = 2^x$ and $y = (\frac{1}{2})^x$ by looking at their graphs.

Growth

| Coordinate Point |
|------------------|
| (-1, .5) |
| (0, 1) |
| (1, 2) |
| (2, 4) |



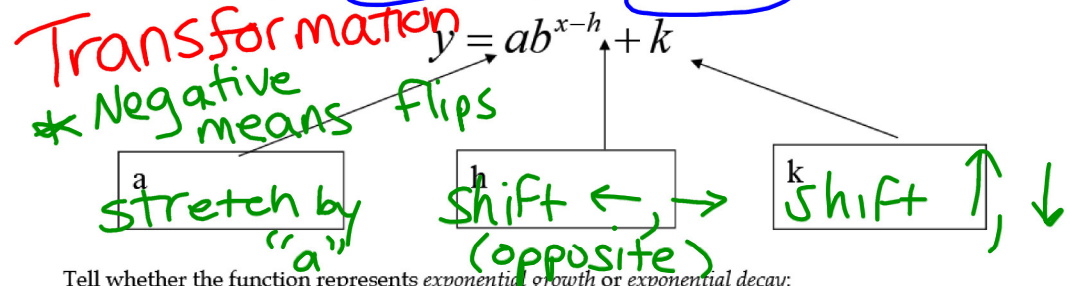
Decay

| Coordinate Point |
|------------------|
| (-2, .25) |
| (-1, .5) |
| (0, 1) |
| (1, .5) |

Domain: $(-\infty, \infty)$
 Range: $(0, \infty)$
 HA: $y = 0$
 y-intercept: $(0, 1)$

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Standard Form of Exponential Decay Function: Remember: $0 < b < 1$



Tell whether the function represents exponential growth or exponential decay:

- a. $f(x) = 4(\frac{5}{8})^x$ b. $g(x) = 10 \cdot 3^x$ c. $h(x) = 8 \cdot 7^{x+3} - 5$ d. $j(x) = 5(\frac{1}{8})^{x+2} + 7$

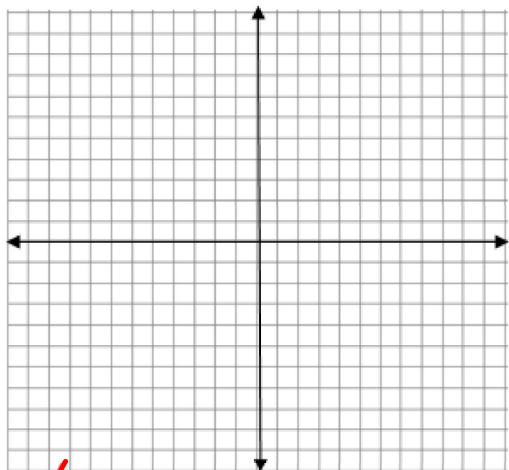
0 < b < 1
DECAY

b > 1
Growth

b > 1
Growth

0 < b < 1
Decay

Chapter 7 Target 2 Notes



1. Graph: $f(x) = 3\left(\frac{1}{2}\right)^x$

Transformations:

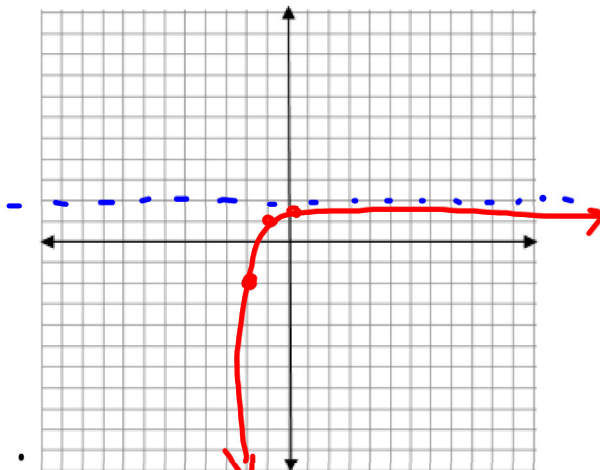
Horizontal asymptote:

y-intercept:

Domain:

Range:

| x | y |
|----|------|
| -2 | -2 |
| -1 | 1 |
| 0 | 1.75 |



3. Graph: $f(x) = -\left(\frac{1}{4}\right)^{x+1} + 2$

Transformations:

Horizontal asymptote:

y-intercept:

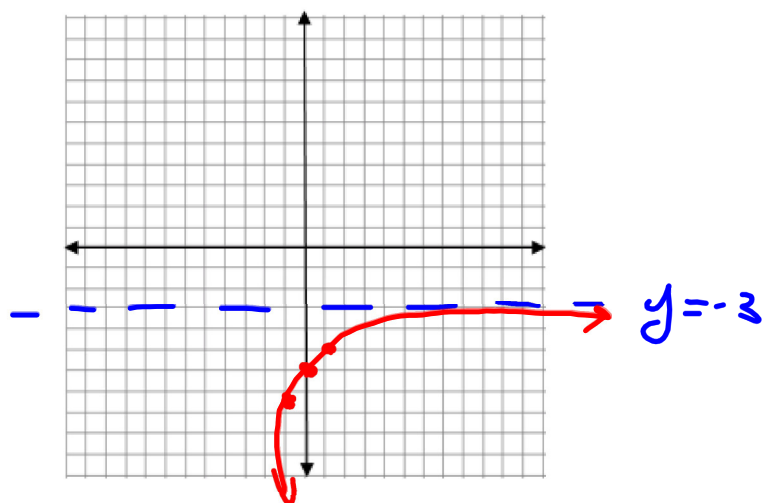
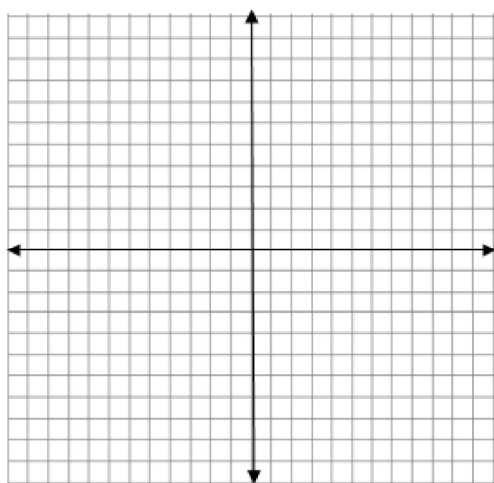
Domain:

Range:

flip. Shifts left!
 Shifts up 2
 $y=2$

$(-\infty, \infty)$
 $(-\infty, 2)$

$(0, 1.75)$



2. Graph: $f(x) = \left(\frac{1}{3}\right)^{x+2} + 1$

Transformations:

Horizontal asymptote:

y-intercept:

Domain:

Range:

| x | y |
|----|------|
| -1 | -7.5 |
| 0 | -6 |
| 1 | -5 |

4. Graph: $f(x) = -2\left(\frac{2}{3}\right)^{x-1} - 3$

Transformations:

Horizontal asymptote:

y-intercept:

Domain:

Range:

flip; shifts right 1,
 shifts down 3;
 stretch by 2
 y = -3

(0, -6)
 (-∞, ∞)
 (-∞, -3)

Target 2 Practice