$y = a(b)^x$ $b > 1$ growth

$b < 1$ decay

Functions & Trig.
Growth or Decay Graphs

Name _____

State whether $f(x)$ is an exponential **growth** or exponential **decay** function.

1.) $f(x) = 3^x$

growth

2.) $f(x) = \left(\frac{5}{8}\right)^x$

decay

3.) $f(x) = (3)^{-x}$

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

decay

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

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

growth

5.) $f(x) = (2)^{0.3x}$

$y = (1.23)^x$

growth

6.) $f(x) = (0.2)^{-x}$

$y = (5)^x$

growth

7.) $f(x) = 0.5(1.2)^x$

a b

ignore

growth

8.) $f(x) = 3(1.4)^{-x}$

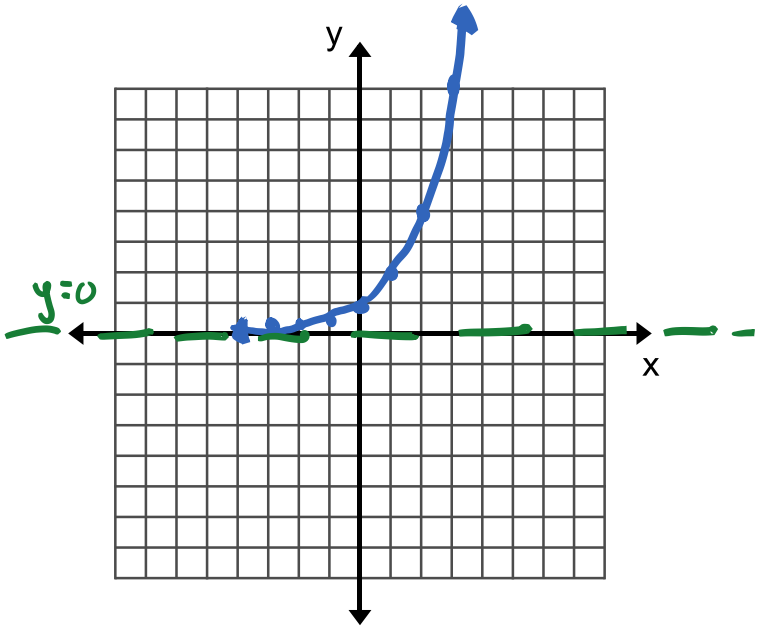
a b

$y = 3(.7)^x$

decay

9.) Graph the function: $f(x) = 2^x$

x	y
-3	.125
-2	.25
-1	.5
0	1
1	2
2	4
3	8



x-values
Left → right

b. Find the domain.

$(-\infty, \infty)$

y-values
down → up

c. Find the range.

$(0, \infty)$

d. Find the y-intercept.

hit y-axis

$(0,1)$

e. Find the x-intercept.

none

f. Find the asymptote.

$y = 0$

g. Describing End Behavior of the function.

As $x \to \infty$, $f(x) \to$ ∞.

As $x \to -\infty$, $f(x) \to$ 0.

y-value
(part of range)

10.) Graph $y = 400(0.85)^{2x} - 6$ on the set of axes below.

x	y
0	394
1	283
2	202.8
3	149.9
4	103
5	72.7
6	50.9
7	35.1
8	23.7
9	15.5
10	9.5