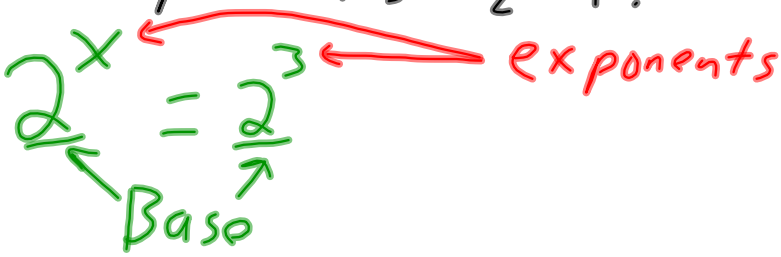
Solving Exponential Equations

1) Make sure it is the same base.

2) Cancel the Base and set the exponents equal.



3) Solve

$$3^{1-2x} = 243$$

$$3^{1-2x} = 3^5$$

$$1-2x = 5$$

$$-1 \qquad -1$$

$$-2x = 4$$

$$\frac{-2x}{-2} = \frac{4}{-2}$$

$$\boxed{x = -2}$$

$$16^{2p-3} \cdot 4^{-2p} = 2^4$$

$$(2^4)^{2p-3} \cdot 4^{-2p} = 2^4$$

Power Rule

$$(a^m)^n = a^{m \cdot n}$$

$$2^{4(2p-3)} \cdot (2^2)^{-2p} = 2^4$$

$$2^{8p-12} \cdot 2^{-4p} = 2^4$$

$$2^{(8p-12)+-4p} = 2^4 \qquad x^2 \cdot x^3 = x^5$$

$$2^{4p-12} = 2^4$$

$$4p - 12 = 4$$

$$+12 \quad +12$$

$$\frac{4p}{4} = \frac{16}{4}$$

$$p = 4$$

Exponential Functions

$y = ab^x$ ← exponent

↖ base

$b > 0$ and $b \neq 1$

$y = 2(3)^x$

2 types of Exp. Behavior

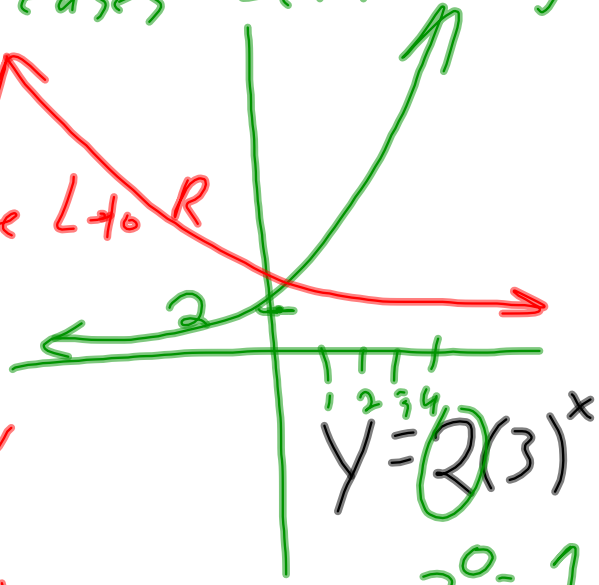
Growth - increases Left to Right

Decay - decrease L to R

$y = ab^x$

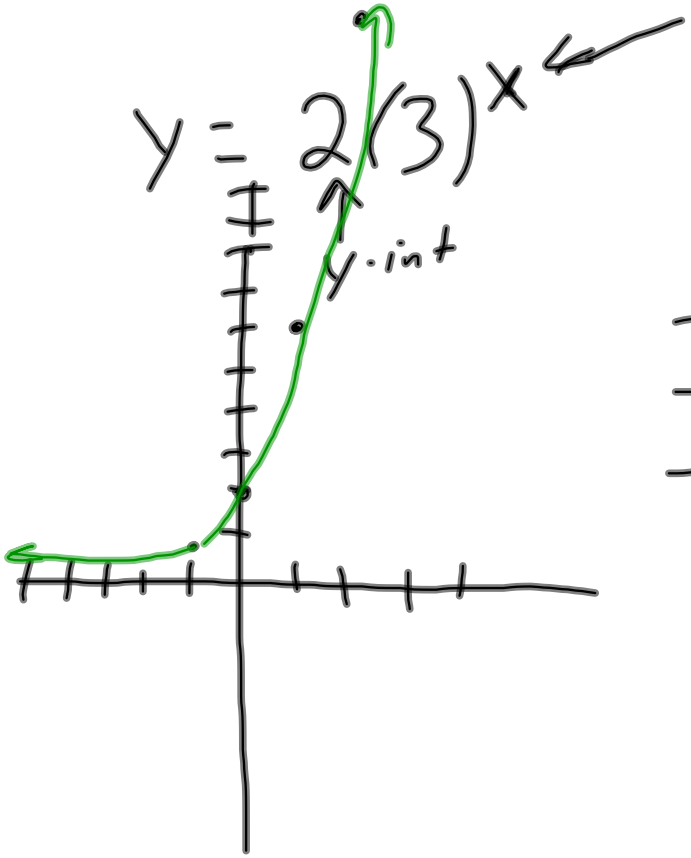
$b > 1$ Grow

$0 < b < 1$ Decay



$3^0 = 1$

a = represents the y-intercept.



x	$2(3)^x$	y
-1	$2(3)^{-1}$	$\frac{2}{3}$
0	$2(3)^0$	2
1	$2(3)^1$	6
2	$2(3)^2$	18
3	$2(3)^3$	54