# Exponential Functions

$y = a b^x$ $b > 0$ and $b \neq 1$

$b$: base

$x$: Exponent

$y = 2(3^x)$

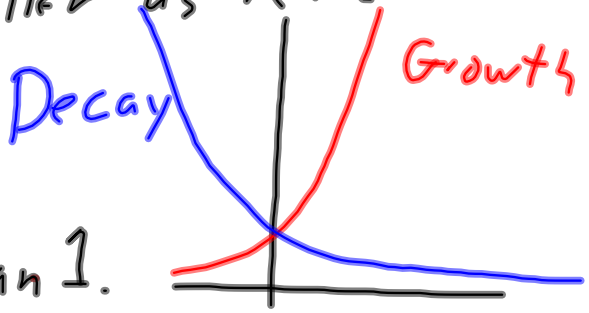
$x = 1 \quad y = 6$

$x = 2 \quad y = 2(3^2) = 2 \cdot 9 = 18$

# 2 Types of Exponential Behavior

Growth - Gets bigger as X increases

Decay - Gets smaller as X increases.




- It will be Growth if "b" is greater than 1.
- It will be Decay if "b" is less than 1.

$y = ab^x$

How do I find the y-intercept?

"a" is the y-intercept.

$$F(t) = a(1+r)^t$$

$y = ab^x$

Amount after "t" Time Periods

Initial amount

Number of Time Periods

Rate of Growth or Decay

You invested $1000 in a savings account. The account pays 5% annual interest. How much money will be in the account after 6 years.

$F(t) = a(1+r)^t$

$a = \$1000$

$t = 6$ years

.05% → Decimal

$\frac{5}{100}$

$r = 0.05$

$F(6) = \$1000(1+0.05)^6$

$F(6) = 1000(1.05)^6$

On calculator $1000(1.05)\wedge 6$

$\$1340.0956$

~~1340.09~~

1340.10