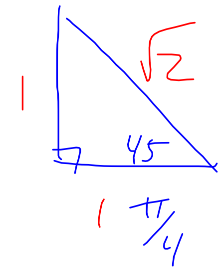
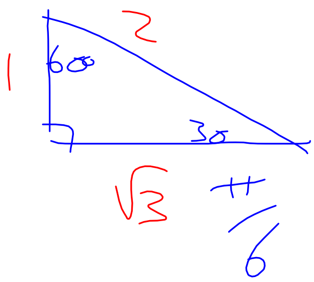
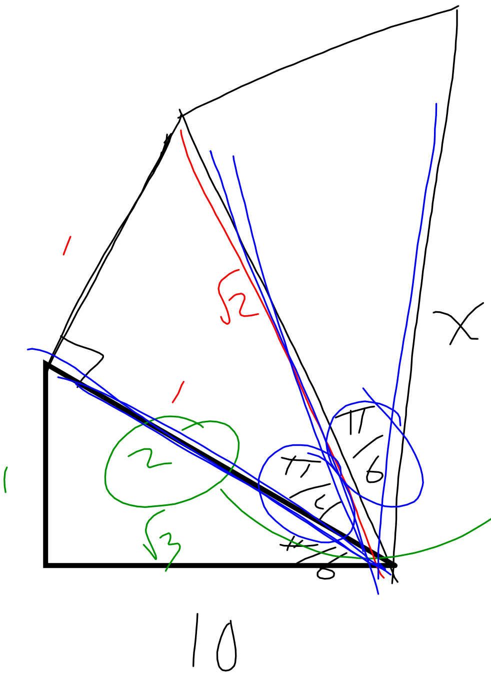
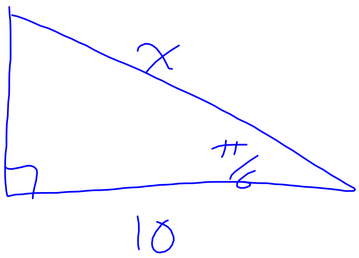






$$\left(\frac{\left(\left(\frac{10}{\sqrt{3}}\right)^2 \sqrt{2}\right)^2}{\sqrt{3}}\right)$$

$$= \frac{40\sqrt{2}}{3}$$

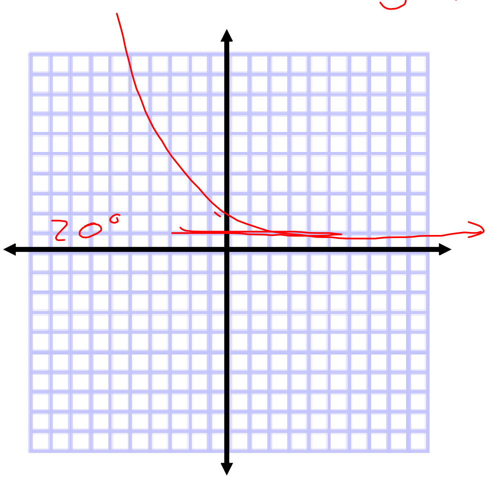


$$\cos\left(\frac{\pi}{6}\right) = \frac{10}{x}$$

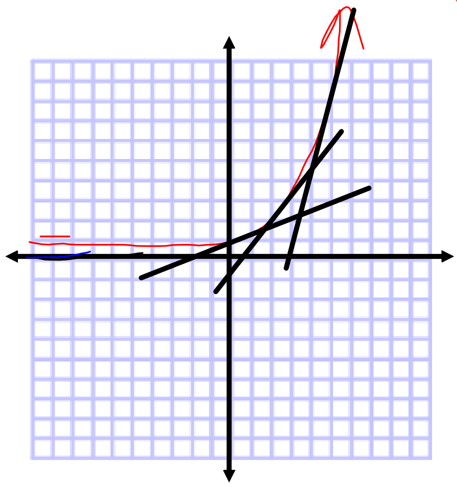
$$x = \frac{10}{\cos\left(\frac{\pi}{6}\right)}$$

Exponential Curves $y = b^x$

$0 < b < 1$ $y = \left(\frac{1}{2}\right)^x$



$b > 1$ ~~ex~~ $y = 2^x$



Rates of Change of Exponential Curves

Finite Differences:

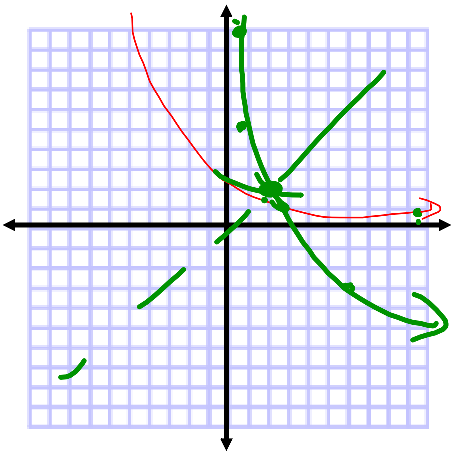
Grow/Decay relative to the original function

∴ R.O.C is also growing/Decaying relative to the function.

Graphs of Inverse Exponential Functions

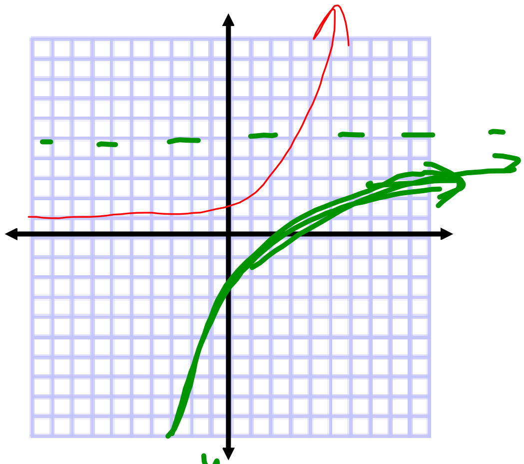
$y = \left(\frac{1}{2}\right)^x$

0 < b < 1



$y = 2^x$

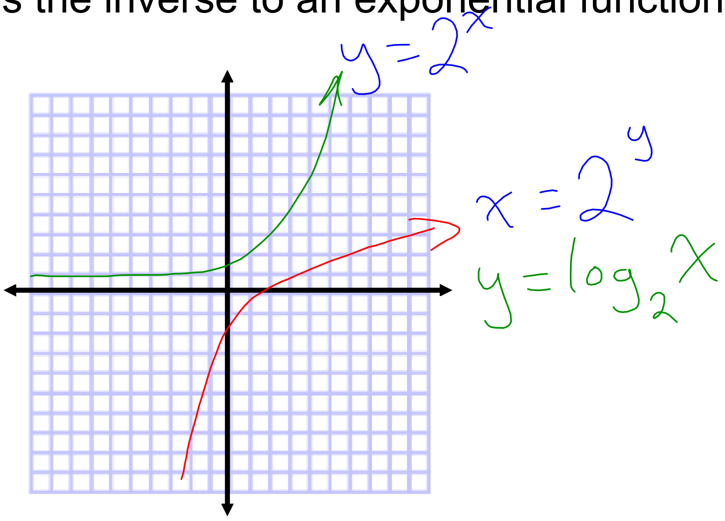
b > 1



$x = 2^y$

Logarithms

A logarithm is the inverse to an exponential functions



A log function is defined as y = $\log_b x$, which reads

y equals the logarithm of x to the base b.

This functions is only defined for b > 0, b ≠ 1

Notaion: base 10 is considered the common logarithm. It is not necessary to write the base. Therefore $\log 50 = \log_{10} 50$

$2^x = 10$

x^2

$x = \frac{\log 10}{\log 2}$

Any exponential relationship can be written using log notation.

$$2^3 = 8 \longleftrightarrow \log_2 8 = 3$$

$$5^2 = 25 \longleftrightarrow \log_5 25 = 2$$

$$\boxed{x^y = a \longleftrightarrow \log_x a = y}$$

Evaluate the following:

$\log_3 81 = x$

$3^x = 81$

$3^x = 3^4$

$\therefore x = 4$

$\log_2\left(\frac{1}{16}\right) = x$

$2^x = \frac{1}{16}$

$2^x = \frac{1}{2^4}$

$2^x = 2^{-4}$

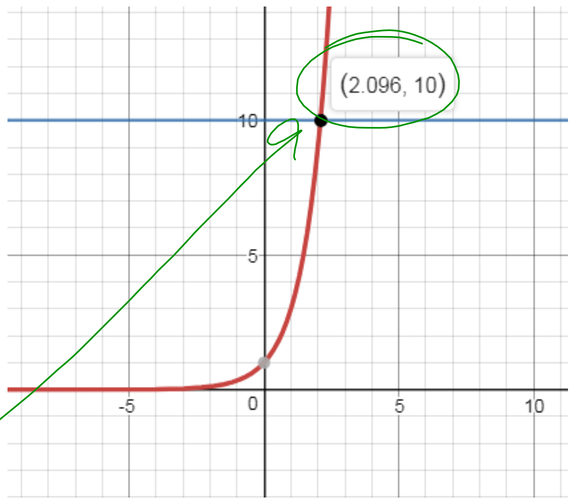
$\therefore x = -4$

Determine a solution for $\log_3 10$

$3^x = 10$

graph $y = 3^x$

graph $y = 10$



$x = 2.096$

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1 - 4, 6, 8, 10