

How do I graph Exponential and Logarithmic Graphs?

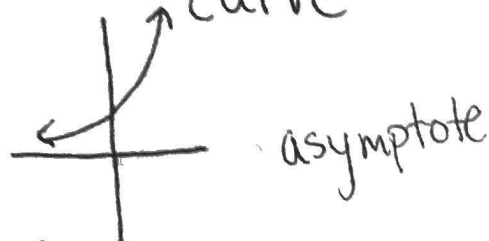
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Exponential Graph

$$y = b^x$$

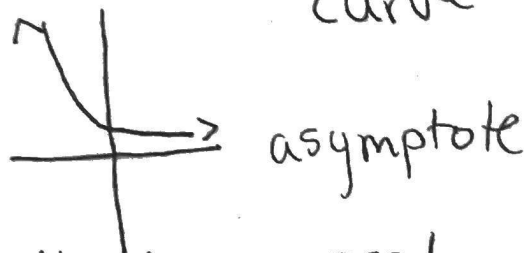
$$b > 1$$

Increasing curve



$$0 < b < 1$$

Decreasing curve



Asymptote: a line that a graph approaches but does not cross.

Parent: Exponential

$$y = b^x$$

Transformed Equation

$$y = b^{(x-h)} + k$$

b = increasing / decreasing

h = Left / right

k = up / down

$y = k$
(horizontal asymptote)

Parent: Logarithm

$$y = \log_b x$$

Transformed equation

$$y = \log_b (x-h) + k$$

b = increasing / decreasing

h = Left / ~~over~~ right

$x=h$ vertical asymptote

k = up / down

Ex 1

$$y = 1.5^{x-2} + 4$$

Exponential

★ Increasing

★ Right 2

★ up 4

★ $y=4$ horizontal asymptote

Ex 2

$$y = \log_2 (x-7) + 5$$

Log

Increasing

Right 7

★ $x=7$ vertical asymptote

up 5