

Graphing Exponential and Logarithmic Functions

Parent Function: $f(x) = a \cdot b^{(x-h)} + k$

hori. shift (LIAR!!)
 ↑
 $(x-h)$
 ↓
 hori. asymp.
 ↓
 base
 $b > 1$, Growth
 $0 < b < 1$, Decay
 ↓
 • Stretch
 • Shrink
 • reflect

Day 1 – Exponential Functions ONLY – slides 1 and 2

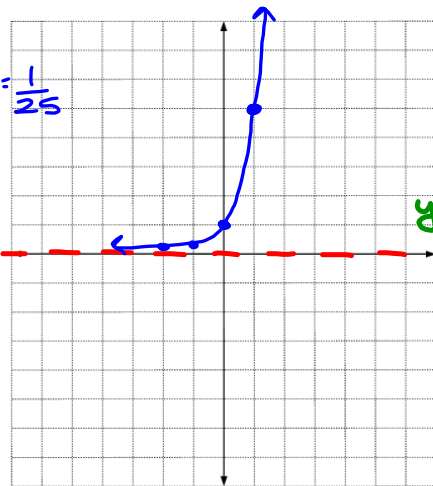
Day 2 – Exponential Functions ONLY – slides 3 and 4

Day 3 – Logarithmic Functions – slides 1, 2, 3, 4

Slide 1

$$f(x) = 5^{x+0} \rightarrow x=0$$

x	y
-2	$5^{-2} = \frac{1}{5^2} = \frac{1}{25}$
-1	$5^{-1} = \frac{1}{5}$
→ 0	$5^0 = 1$
1	$5^1 = 5$
2	$5^2 = 25$



	EXPONENTIAL FUNCTION	**LOGARITHMIC FUNCTION
Domain	\mathbb{R}	_____
Range	$(0, \infty)$	_____
y-Intercept	$(0, 1)$	_____
Asymptote	$y=0$	_____
Growth/Decay?	Growth	N/A

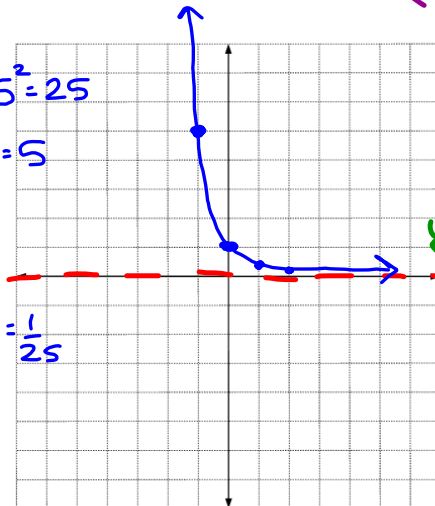
**Equation of the inverse of the exponential function

Slide 2

$$f(x) = 5^{-x} + 0 \quad \begin{matrix} -x=0 \\ x=0 \end{matrix}$$

$$f(x) = (5^{-1})^x = \left(\frac{1}{5}\right)^x$$

x	y
-2	$5^{-(-2)} = 5^2 = 25$
-1	$5^{-(-1)} = 5^1 = 5$
→ 0	$5^{-(0)} = 1$
1	$5^{-(1)} = \frac{1}{5}$
2	$5^{-(2)} = \frac{1}{25}$



	<u>EXPONENTIAL FUNCTION</u>	<u>**LOGARITHMIC FUNCTION</u>
Domain	\mathbb{R}	_____
Range	$(0, \infty)$	_____
y-Intercept	$(0, 1)$	_____
Asymptote	$y = 0$	_____
Growth/Decay?	<u>Decay</u> *	N/A

**Equation of the inverse of the exponential function