Exponential and Logarithmic Functions

Exponential Functions
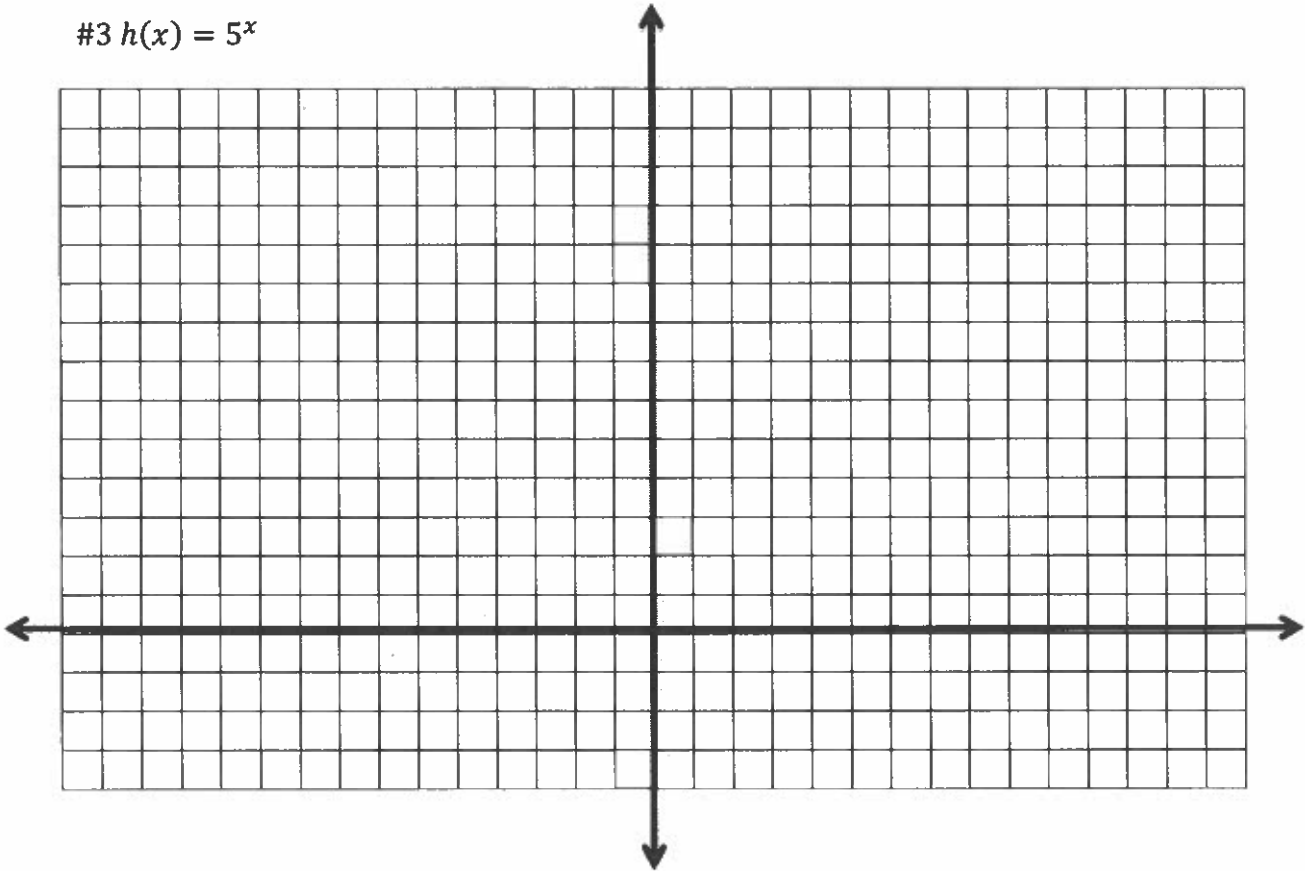
$0 < base < 1$		$base > 1$	
Domain		Domain	
Range		Range	
HA:		HA:	
y-intercept		y-intercept	
Point		Point	

1. Using the same grid, graph and label the following:

#1 $f(x) = 2^x$

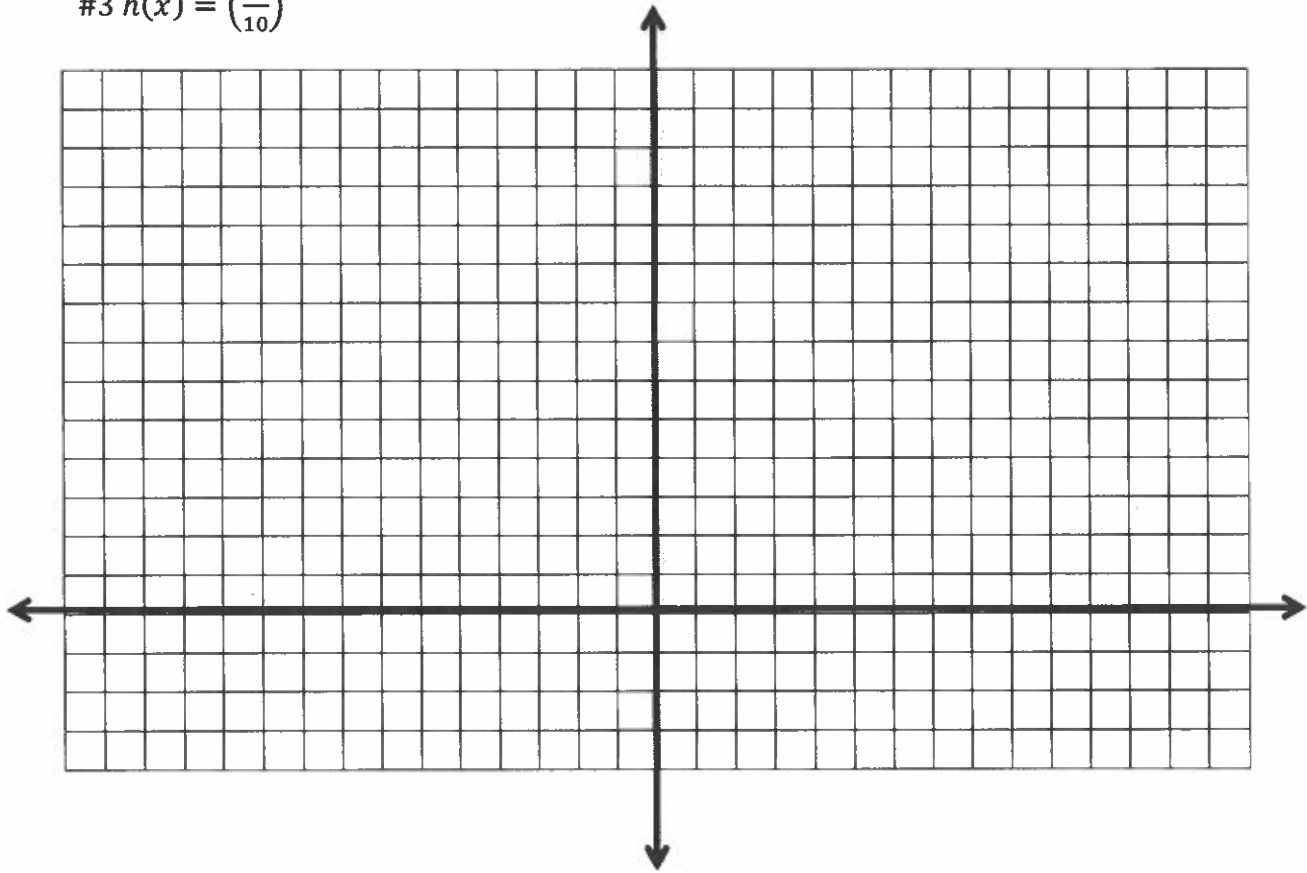#2 $g(x) = 3^x$

#3 $h(x) = 5^x$

2. Using the same grid, graph and label the following:

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

#2 $g(x) = \left(\frac{1}{5}\right)^x$

#3 $h(x) = \left(\frac{1}{10}\right)^x$

Transformations of Exponential Functions

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

> ➤ Using words, describe what transformations took place.

1. $y = 3 \cdot 5^{x-8} + 10$

2. $y = -2^{-x+7}$

3. $y = -\left(\frac{1}{2}\right)^{5x+10} - 3$
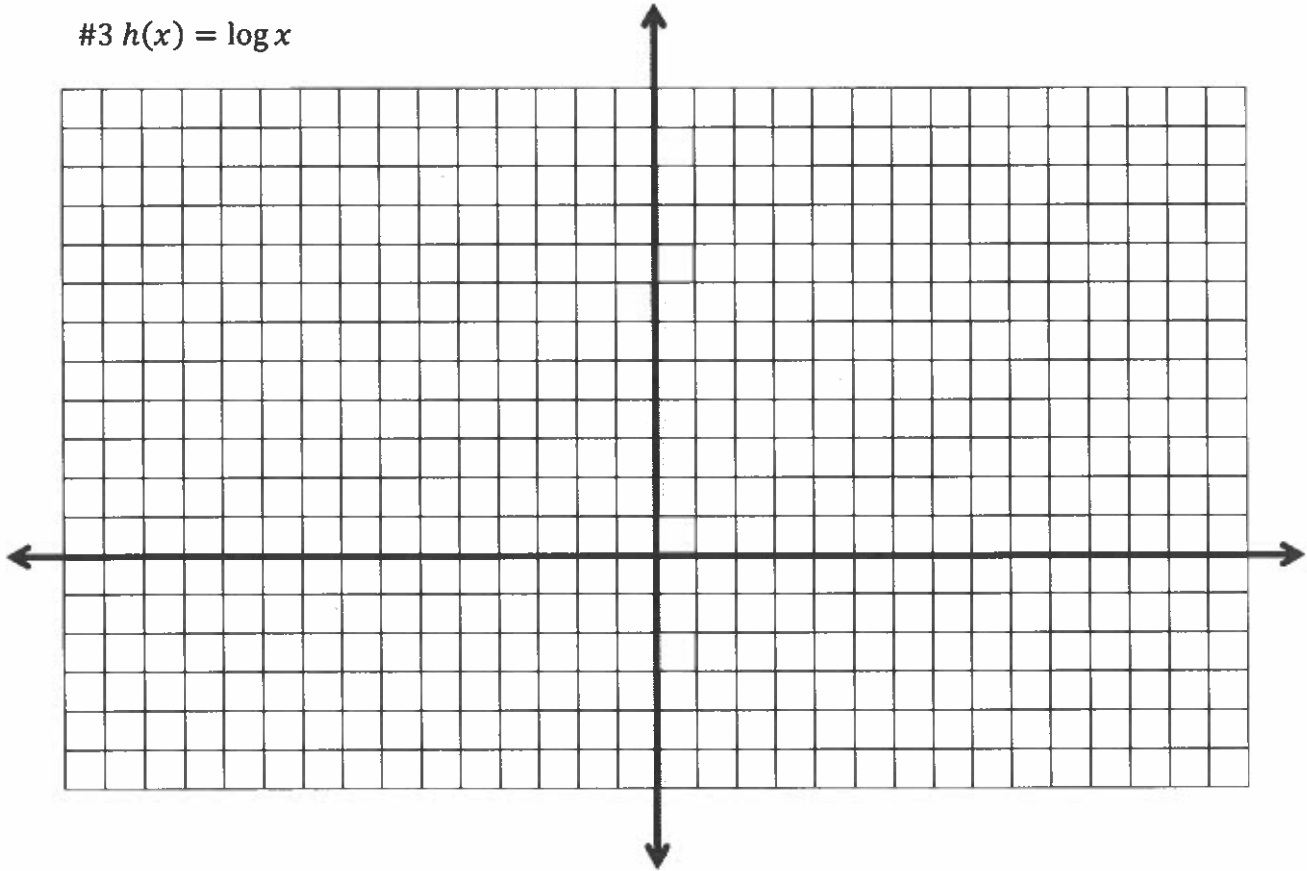
Logarithmic Functions

$0 < base < 1$		$base > 1$	
Domain		Domain	
Range		Range	
VA:		VA:	
x-intercept		x-intercept	
Point		Point	

1. Using the same grid, graph and label the following:

#1 $f(x) = \log_2 x$

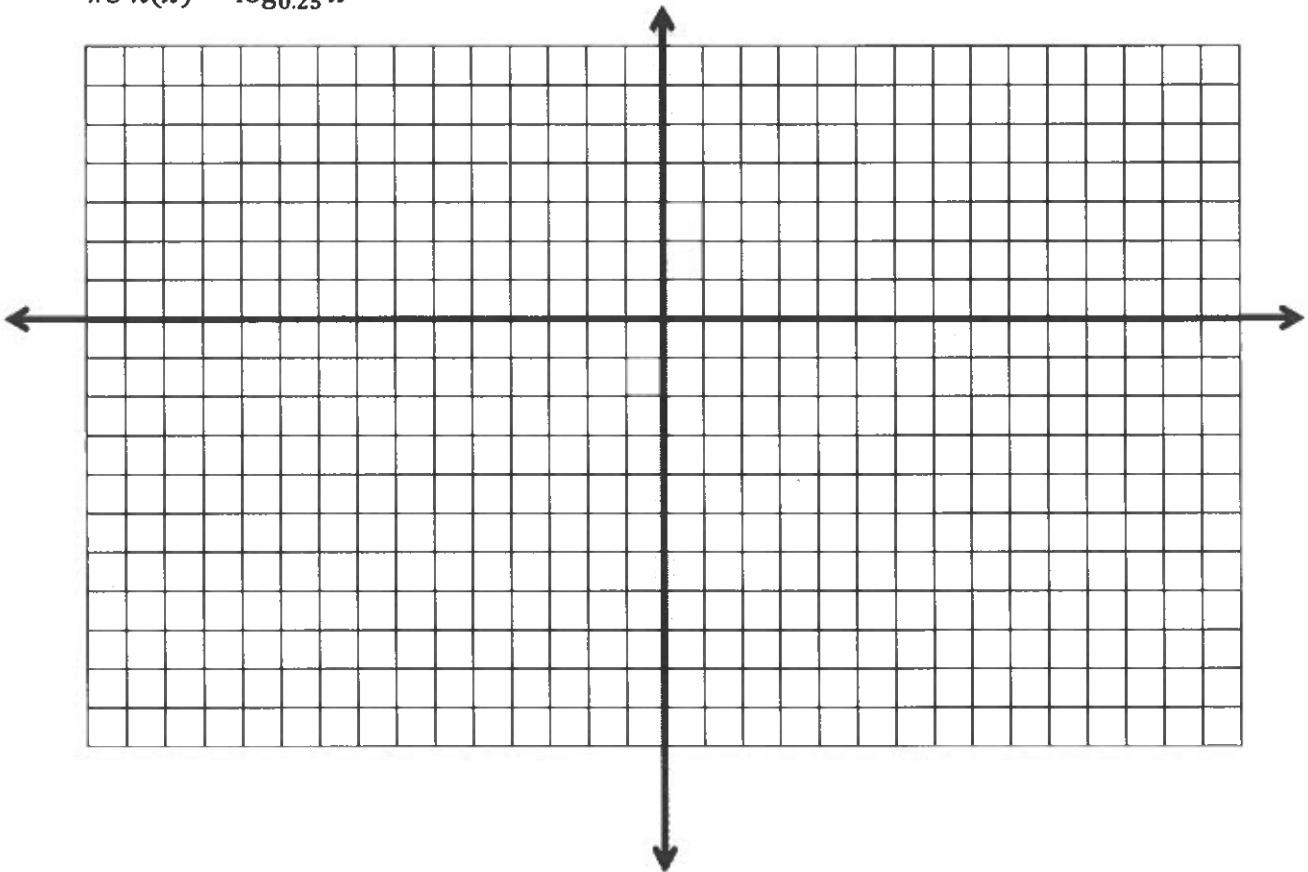#2 $g(x) = \log_4 x$

#3 $h(x) = \log x$

2. Using the same grid, graph and label the following:

#1 $f(x) = \log_{0.5} x$

#2 $g(x) = \log_{0.1} x$

#3 $h(x) = \log_{0.25} x$

Transformations of Exponential Functions

$$y = \pm a \log_c\big(\pm b(x - h)\big) + k$$

➢ Using words, describe what transformations took place.

1. $y = 0.5 \log_3(x - 8) + 10$

2. $y = \log_2(-x) + 7$

3. $y = \log(2x + 3) - 1$