

$\log_a x = y$   
 $a^y = x$

Unit 2

Exponents and Logarithms


**Exponenti**

$y=2^x$

$y=3^x$

$y=4^x$

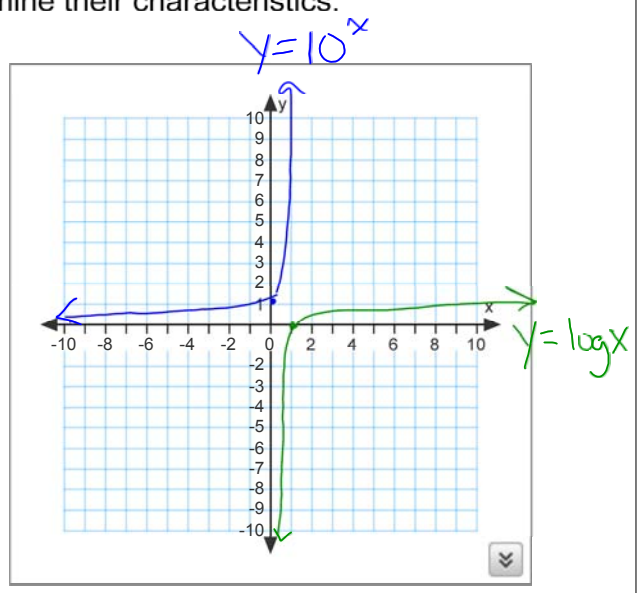
**Asymptoti**

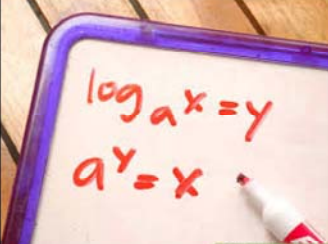


4.6 Introduction to Logarithms


On your graphing calculator, with a standard window, draw  $Y_1 = \log(x)$ . On the same grid, plot  $Y_2 = 10^x$ . Sketch them on the grid below and determine their characteristics.

	$y=10^x$	
Domain:	$x \in \mathbb{R}$	$x > 0$
Range:	$y > 0$	$y \in \mathbb{R}$
X-int:	none	$(1, 0)$
Y-int:	$(0, 1)$	none
Asymptotes:	$y = 0$	$x = 0$





Unit 2



Exponents and Logarithms


**Exponenti**

$y=2^x$

$y=3^x$

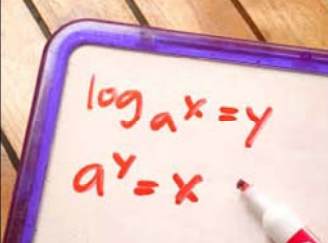
$y=4^x$

**Asympto**



Ex.) Complete the following table:

Equation	Value of x-intercept	Value of y-intercept	End behaviour	Domain	Range
$y = 5(2)^x$	none	(0,5)	II → I	$x \in \mathbb{R}$	$y > 0$
$y = \log x$	(1,0)	none	IV → I	$x > 0$	$y \in \mathbb{R}$
$y = -0.5(3)^x$	none	(0,-0.5)	III → IV	$x \in \mathbb{R}$	$y < 0$
$y = 10x$ $y = 10x$	(0,0)	(0,0)	III → I	$x \in \mathbb{R}$	$y \in \mathbb{R}$
$y = 3(0.2)^x$	none	(0,3)	II → I	$x \in \mathbb{R}$	$y > 0$
$y = 3x^2$	(0,0)	(0,0)	II → I	$x \in \mathbb{R}$	$y \geq 0$
$y = -2 \log x$	(1,0)	none	I → IV	$x > 0$	$y \in \mathbb{R}$
$y = -2(0.5)^x$	none	(0,-2)	III → IV	$x \in \mathbb{R}$	$y < 0$
$y = -5x^{10}$	(0,0)	(0,0)	III → IV	$x \in \mathbb{R}$	$y < 0$
constant $y = -3(10)^2$	none	(0,-300)	III → IV	$x \in \mathbb{R}$	$y = -300$
$y = 0.5(1)^x$	none	(0,0.5)	II → I	$x \in \mathbb{R}$	$y > 0$



Unit 2

Exponents and Logarithms

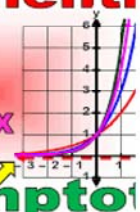
**Exponenti**

$y=2^x$

$y=3^x$

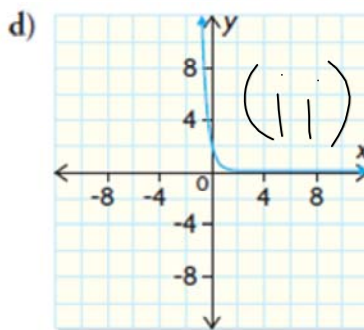
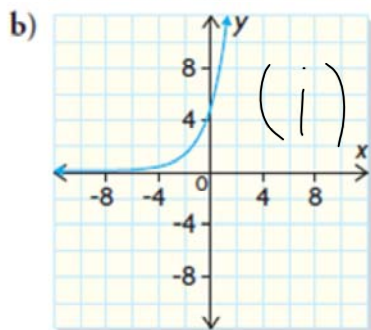
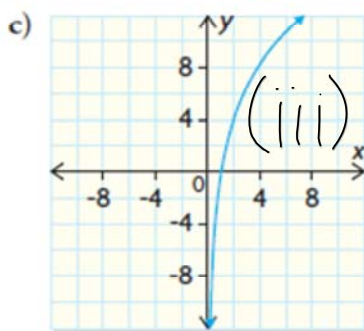
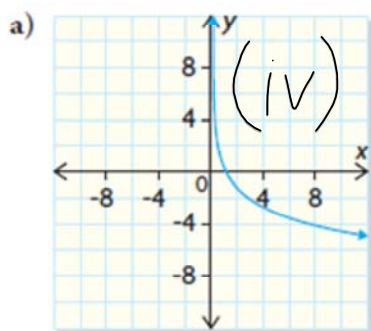
$y=4^x$

**Asymptote**



Which function matches each graph below? Provide your reasoning.

- i)  $y = 5(2)^x$     ii)  $y = 2(0.1)^x$     iii)  $y = 6 \log x$     iv)  $y = -2 \ln x$



Pg. 421 #5, 6, 8, 9, 10, 13.