Lesson 5.1 Math Lab: Assess Your Understanding, pages 341–343

1. Use graphing technology. Graph each function below, then complete the table.

Function	x-intercept	y-intercept	Equation of asymptote	Domain	Range
$y = 4^x$	none	1	$y = 0$	$x \in \mathbb{R}$	$y > 0$
$y = \left(\dfrac{5}{3}\right)^x$	none	1	$y = 0$	$x \in \mathbb{R}$	$y > 0$
$y = \left(\dfrac{1}{3}\right)^x$	none	1	$y = 0$	$x \in \mathbb{R}$	$y > 0$
$y = \left(\dfrac{2}{5}\right)^x$	none	1	$y = 0$	$x \in \mathbb{R}$	$y > 0$

2. The functions in *Construct Understanding* and question 1 are
**exponential functions**. Why do you think this name is appropriate?

Sample response: Each function is a power of a positive number with the
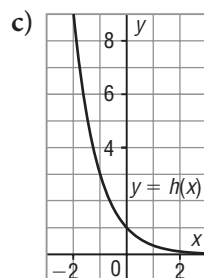variable *x* in the exponent.

3. The graphs of three functions are shown. Which graphs might
represent exponential functions? How do you know?

a)
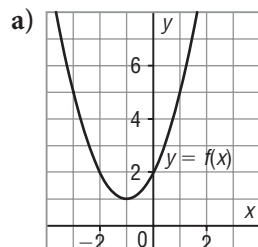
The graph is a parabola, so it is not always
increasing or always decreasing.
It is not an exponential function.

b)
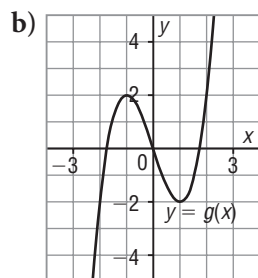
The graph does not have the characteristic
shape of an exponential function.
It is not an exponential function.

c)

The graph might represent an exponential function
because it goes down to the right; the *y*-intercept is
1, and the equation of the asymptote is $y = 0$.

4. Could each table of values describe an exponential function? Justify your answer.

a)

x	y
−2	0.01
−1	0.1
0	1
1	10
2	100

I graphed each table of values.
Yes; the graph passes through (0, 1), it increases as *x* increases, and it could have an asymptote with equation *y* = 0.

b)

x	y
−2	25
−1	5
0	1
1	0.2
2	0.04

Yes, the graph passes through (0, 1), it decreases as *x* increases, and it could have an asymptote with equation *y* = 0.

c)

x	y
−2	9
−1	4
0	1
1	0
2	1

No, the graph decreases to a minimum value, then increases.