

EXPONENTIAL FUNCTIONS

Example 1:

X	0	1	2	3	4	5
Y	64	32	16	8	4	2

The common factor for the table above is $\frac{1}{2}$. The y-intercept is 64.

The exponential equation is $y = 64\left(\frac{1}{2}\right)^x$.

Example 2:

X	2	3	4	5	6	7	8	9	10	11	12	
Y	$\frac{1}{2}$	1	2	4	8	16	32	64	128	256	512	1024

The common factor for the table above is 2. The y-intercept is $\frac{1}{4}$.

The exponential equation is $y = \frac{1}{4}(2)^x$.

Example 3:

The exponential function g , represented in the table, can be written as $g(x) = a \cdot b^x$.

x	g(x)
0	12
1	2

$$g(x) = 12\left(\frac{1}{6}\right)^x$$

Complete the equation for $g(x)$.

Example 4:

a. Complete the table of values

X	Y
0	2
1	6 $\times 3$
2	18 $\times 3$
3	54
4	162
5	486

b. Write the exponential function that represents the values in the table above.

$$y = 2(3)^x$$

Example 5:

Write an exponential equation that passes through the points (2, 3) and (4, 27).

X	Y
0	1
1	3
2	9
3	27

$3 \times 3 = 9$
 $9 \times 3 = 27$ ✓
 $y = \frac{1}{3}(3)^x$

Example 6:

Write an exponential equation that passes through the points (4, 6) and (7, 48).

X	Y
0	$\frac{3}{8}$
1	$\frac{3}{4}$
2	$\frac{3}{2}$
3	3
4	6
5	12
6	24
7	48

$6 \times 2 = 12$
 $12 \times 2 = 24$
 $24 \times 2 = 48$ ✓
 $y = \frac{3}{8}(2)^x$