

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Learning Goal 7.1**

Applying one or more transformations to exponential and logarithmic functions, including translations, stretches and reflections.

**More Questions - Solutions**

1. Express each expression in logarithmic form.

a.  $x = 3^5$

$$\log_3 x = 5$$

b.  $9^n = c$

$$\log_9 c = n$$

c.  $3^{-4} = \frac{1}{81}$

$$\log_3 \left( \frac{1}{81} \right) = -4$$

2. Express each expression in exponential form.

a.  $\log 10000 = 4$

$$10^4 = 10000$$

b.  $\log_3 \left( \frac{1}{27} \right) = -2$

$$3^{-2} = \frac{1}{27}$$

c.  $\ln 1 = 0$

$$e^0 = 1$$

3. Evaluate each logarithm without using a calculator.

a.  $\log_3 27$

$$3^x = 27$$

$$x = 3$$

b.  $\log_4 \left( \frac{1}{64} \right)$

$$4^x = \frac{1}{64}$$

$$x = -3$$

c.  $\log 0.001$

$$10^x = \frac{1}{1000}$$

$$x = -3$$

d.  $\log_2 128$

$$2^x = 128$$

$$x = 7$$

e.  $\log_5 125$

$$5^x = 125$$

$$x = 3$$

f.  $\log 100$

$$10^x = 100$$

$$x = 2$$

4. Evaluate  $4^m$  if  $m = \log 0.01$ .

$$10^m = \frac{1}{100}$$

$$m = -2$$

$$4^{-2} = \frac{1}{16}$$

5. Evaluate  $n^3$  if  $5 = \log_n 243$ 

$$n^5 = 243$$

$$n = 3$$

$$3^3 = 27$$