

Learning Target

7.3 Logarithmic Functions as Inverses

a.) I can convert between exponential form and logarithmic form.

Convert each of the following from LOG FORM to EXPONENTIAL FORM or vice versa.

1.)  $6^3 = 216$   
 $\log_6 216 = 3$

2.)  $\log_5 125 = 3$   
 $5^3 = 125$

3.)  $2^4 = 16$   
 $\log_2 16 = 4$

4.)  $\log_6 \frac{1}{1296} = -4$   
 $6^{-4} = \frac{1}{1296}$

5.)  $7^3 = 343$   
 $\log_7 343 = 3$

6.)  $\log_2 128 = 7$   
 $2^7 = 128$

8.)  $8^{-3} = \frac{1}{512}$   
 $\log_8 \frac{1}{512} = -3$

9.)  $\log_4 64 = 3$   
 $4^3 = 64$

10.)  $3^4 = 81$   
 $\log_3 81 = 4$

11.)  $\log_8 4096 = 4$   
 $8^4 = 4096$

12.)  $5^2 = 25$   
 $\log_5 25 = 2$

13.)  $\log_{10} 10 = 1$   
 $10^1 = 10$

14.)  $\log_e 2.718 \approx 1$   
 $e^1 = 2.718$

15.)  $\log_{20} 400 = 2$   
 $20^2 = 400$

16.)  $2^0 = 1$   
 $\log_2 1 = 0$

17.)  $\log_5 5 = 1$   
 $5^1 = 5$

18.)  $8^1 = 8$   
 $\log_8 8 = 1$

19.)  $\log_e e = 1$   
 $e^1 = e$

$$20.) 10^{-1} = 0.1$$

$$\log_{10} 0.1 = -1$$

$$21.) \log_e e^3 = 3$$

$$e^3 = e^3$$

$$22.) 5^0 = 1$$

$$\log_5 1 = 0$$

$$23.) 2^4 = 16$$

$$\log_2 16 = 4$$

$$24.) \log_3 243 = 5$$

$$3^5 = 243$$

$$25.) \log_{\frac{1}{6}} 36 = -2$$

$$\left(\frac{1}{6}\right)^{-2} = 36$$

$$26.) 5^3 = 125$$

$$\log_5 125 = 3$$

$$27.) \log_{12} 144 = 2$$

$$12^2 = 144$$

$$28.) \log 1000 = 3$$

$$10^3 = 1000$$

~~$$29.) \ln 1 = 2.718$$~~

$$30.) \left(\frac{1}{8}\right)^{-2} = 64$$

$$\log_{\frac{1}{8}} 64 = -2$$

$$31.) 4^{-3} = \frac{1}{64}$$

$$\log_4 \frac{1}{64} = -3$$

$$32.) e^3 = 20.08553$$

$$\ln 20.08553 = 3$$

$$33.) \ln 0.13534 = -2$$

$$e^{-2} = 0.13534$$

$$34.) \log_2 32 = 5$$

$$2^5 = 32$$

$$35.) e^4 = 54.5982$$

$$\ln 54.5982 = 4$$

$$36.) 5^2 = 25$$

$$\log_5 25 = 2$$

$$37.) \left(\frac{1}{3}\right)^{-3} = 27$$

$$\log_{\frac{1}{3}} 27 = -3$$

$$38.) \log_4 20 = 2.1610$$

$$4^{2.1610} = 20$$

$$39.) \log 25 = 1.3979$$

$$10^{1.3979} = 25$$

$$40.) 6^{-3} = \frac{1}{216}$$

$$\log_6 \frac{1}{216} = -3$$

$$41.) e^{-3} = 0.04979$$

$$\ln 0.04979 = -3$$

$$42.) \log_4 256 = 4$$

$$4^4 = 256$$

$$43.) \ln 12 = 2.4849$$

$$e^{2.4849} = 12$$