6-3 Additional Practice

Logarithms

Complete the table.

Exercise	Exponential Form	Logarithmic Form
1.	$4^3 = 64$	
2.		$\log x = 35$
3.	$6^{-3} = \frac{1}{216}$	
4.		$\ln(3x) = 8$
5.	$1000^0 = 1$	
6.		$\log_5 \sqrt{5} = \frac{1}{2}$

Solve the equation for x. Show your work.

7. $2 + \log_5 x = 3$

8. $4^{(x+2)} - 16 = 60$

9. $2 \ln(x-5) = 25$

Evaluate each logarithmic expression.

10. $\log_5 \frac{1}{625}$

11. $\log_8 8^5$

12. $\log_3(-10)$

13. $\ln(-e)$

14. $\ln e^3$

15. $\log 150$

16. Deshawn invests $5,000 in a savings account that earns 6% annual interest, compounded continuously. How long will it take to double his money?

17. Compare the following values and determine which one is greater. Explain.

$\log_{0.5} 6$ and $\log_{0.5} 4$

6-3 Additional Practice

Logarithms

Complete the table.

Exercise	Exponential Form	Logarithmic Form
1.	$4^3 = 64$	$\log_4 64 = 3$
2.	$x = 10^{35}$	$\log x = 35$
3.	$6^{-3} = \frac{1}{216}$	$\log_6 \frac{1}{216} = -3$
4.	$x = \frac{e^8}{3}$	$\ln(3x) = 8$
5.	$1000^0 = 1$	$\log_{1000} 1 = 0$
6.	$5^{\frac{1}{2}} = \sqrt{5}$	$\log_5 \sqrt{5} = \frac{1}{2}$

Solve the equation for x. Show your work.

7. $2 + \log_5 x = 3$

$\log_5 x = 1$

$x = 5^1$

$x = 5$

8. $4^{(x+2)} - 16 = 60$

$4^{(x+2)} = 76$

$\log_4 76 = x + 2$

$x \approx 1.12$

9. $2 \ln(x-5) = 25$

$\ln(x-5) = 12.5$

$e^{12.5} = x - 5$

$x = e^{12.5} + 5$

Evaluate each logarithmic expression.

10. $\log_5 \frac{1}{625}$

–4

11. $\log_8 8^5$

5

12. $\log_3(-10)$

No solution

13. $\ln(-e)$

No solution

14. $\ln e^3$

3

15. $\log 150$

≈ 2.176

16. Deshawn invests $5,000 in a savings account that earns 6% annual interest, compounded continuously. How long will it take to double his money?

about 12 years

17. Compare the following values and determine which one is greater. Explain.

$\log_{0.5} 6$ and $\log_{0.5} 4$

$\log_{0.5} 6 \approx -2.58$ $\log_{0.5} 4 = -2$

So $\log_{0.5} 4$ is greater than $\log_{0.5} 6$.