# Chapter 11 Review

*Directions: Complete each of the following sets of problems.*

**Use scientific notation to write the approximate value of each number below.**

1. 5040

2. 0.111

3. 0.000099

**Write each value in scientific notation as a whole number.**

4. $4.20 \times 10^{-2}$

5. $6.67 \times 10^{5}$

6. How long would it take for a bolt of lightening to reach our planet, Earth, if it is $3.3 \times 10^{13}$ kilometers away when its light travels at a rate of 300,000,000 meters per second? Express your answer in scientific notation in seconds.

**Solve the following problems dealing with exponential functions.**

7. Find the following values for $f(x)$ if $f(x) = 5^{x}$: $f(2)$, $f(-2)$, $f(-1)$, $f(3)$.

8. Find the following values for $h(x)$ if $h(x) = 49^{x}$: $h(0)$, $h(1/2)$, $h(-1/2)$, $h(-1)$.

**Graph the following exponential function:**

9. $f(x) = -1/2\ [1(1/2)]^{x}$

**Use the two exponential functions given below and find the points where the two graphs intersect, or the point of intersection.**

10. $y = 2^{x}$: $y = 1/2^{x+2}$

11. *Graph* xy = 12 and its inverse function. Can both of these equations represent functions?

**Express the following exponential functions in logarithmic form.**

12. $3^0 = 1$

13. $5^{-3} = 0.008$

14. $20^4 = 160{,}000$

15. $9^{-1/2} = 1/3$

**Express the following logarithmic functions in exponential form.**

16. $\log_4 64 = 3$

17. $\log_{0.1} 1 = 0$

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

19. $2 = \log_{10} 100$

**Evaluate the following logarithmic functions.**

20. $\log_{49} 7$

21. $\log_9 3$

22. $\log_3 81$

23. $\log_4 8$

**Graph the following logarithmic function. Determine the domain and range, and determine if it an increasing or decreasing function. You do not have to submit your graph.**

24. $y = -\log_{1/2} x$

**Find the logarithm for the following products to a base of 3.**

25. 9 x 3

26. 729 x 1/9

27. 1/3 x 1/27

**Find the logarithm for the following quotients, to a base of 3.**

28. 81 ÷ 27

20. 243/27

30. 27/ 729