

Exponential and Logarithmic Functions
 Chapter Exercises 11–15, 17, 19, 21, 23, 25

Section 10.1

1. $\log_2 2 = \log_2 2^1 = 1$

2. $\log_2 \left(\frac{2}{2} \right) = \log_2 1 = 0$

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

4. $\log_2 \frac{2^3}{2^2} = \log_2 2 = 1$

5. $\log_2 \sqrt{\frac{2^4}{2^2}} = \log_2 2 = 1$

Write each expression as one logarithm.

6. $\log_2 x + \log_2 (2y)$

7. $\log_2 (2x) - \log_2 x$

8. $3 \log_2 x$

9. $2 \log_2 x + \frac{1}{3} \log_2 (x+3) - 5 \log_2 (2x+5)$

10. $\log_2 (x^2 y^3) - \log_2 x \sqrt{y} - \log_2 \left(\frac{x}{y} \right)$

11. $\log_2 x^2 + \frac{1}{3} \log_2 (x^2 y^3) - 5 \log_2 x$

12. $2 \log_2 x - 3 \log_2 \left(\frac{1}{x} \right) + 5 \log_2 (xy)$

13. $5 \log_2 x - \frac{1}{3} \log_2 (2x+5) - 5 \log_2 (2x+5)$

14. $2 \log_2 \frac{x^2}{y} - 3 \log_2 y + \frac{1}{3} \log_2 x^2 y^3$