

Exponential and Logarithms Review

1-3: Simplify each expression.

1. $(3^{\sqrt{8}})^{\sqrt{2}}$

2. $11^{\sqrt{5}} \cdot 11^{\sqrt{45}}$

3. $9^{\sqrt{3}} \div 3^{\sqrt{3}}$

4-9: Solve each expression.

4. $3^y = 3^{3y+1}$

5. $3^x = 9^{x+1}$

6. $8^{r-1} = 16^{3r}$

7. $\left(\frac{1}{3}\right)^p = 3^{p-6}$

8. $\frac{1}{27} = 3^{x-5}$

9. $\log_{\sqrt{3}} 27 = x$

10-15: Evaluate each expression.

10. $\log_{10} 100$

11. $\log_4 2$

12. $\log_8 16$

13. $\log_4 4^3$

14. $5^{\log_5 8}$

15. $3^{\log_3 21}$

16-25: Solve each equation.

16. $\log_7 (5x-1) = \log_7 (3x+7)$

17. $\log_3 14 + \log_3 m = \log_3 42$

18. $\log_5 m = \frac{1}{3} \log_5 64 + \frac{1}{2} \log_5 121$

19. $\log_4 (y-1) + \log_4 (y-1) = 2$

$$20. \log y + \log(y + 21) = 2$$

$$21. 5^{y+2} = 15.3$$

$$22. x = \log_4 51.6$$

$$23. 7^{x-2} = 5^x$$

$$24. 2^{5x-1} = 3^{2x+1}$$

$$25. 6x^{\frac{3}{7}} = 105$$

Logarithms Review: KEY

$$1. 3^4$$

$$2. 11^{4\sqrt{5}}$$

$$3. 3^{\sqrt{3}}$$

$$4. -\frac{1}{2}$$

$$5. -2$$

$$6. -\frac{1}{3}$$

$$7. 3$$

$$8. 2$$

$$9. 6$$

$$10. 2$$

$$11. \frac{1}{2}$$

$$12. \frac{4}{3}$$

$$13. 3$$

$$14. 8$$

$$15. 21$$

$$16. 4$$

$$17. 3$$

$$18. 44$$

$$19. 5$$

$$20. 4$$

$$21. -.3051$$

$$22. 2.8446$$

$$23. 11.5665$$

$$24. 1.4125$$

$$25. 795.1007$$