

6.4.D2 – Solving Logarithmic Equations

Condense the expression into a single logarithm.

1. $\log_8 x - \log_8 3$

2. $\log_5 22 + \log_5 p$

3. $19 \log_{10} n$

4. $5 \log_2 y$

5. $4 \log_7 w - \log_7 3$

6. $5 \log_4 x + \log_4 2$

7. $4 \log_b x - 2 \log_b 6 - 12 \log_b y$

8. $2 \log_9 x + 3 \log_9 y - 4 \log_9 z$

Solve the logarithmic equation. Remember to check for extraneous solutions.

9. $\log_2(5x - 2) = 3$

10. $\log_8(5x + 3) = \log_8(3x + 11)$

11. $7 \log_7(x - 2) - 15 = 6$

12. $\log_3(7 - 4x) = \log_3(2x - 5)$

Use a property of logarithms to condense the left side of the equation and then solve. Remember to check for extraneous solutions.

13. $\log_2 x - \log_2 5 = \log_2 10$

14. $\log_2(x + 6) - \log_2 x = 3$

15. $\log_4 x + \log_4 x = 3$

16. $\log_7 4 + \log_7(-5x - 4) = \log_7 48$

17. $\log_2(x + 21) - \log_2 x = 2$

18. $\log_3(x - 5) - \log_3 x = \log_3 6$