1. Given that \( \log_2 x - 3 \log_2 y = 3 - 2 \log_2 x \), express \( y \) in terms of \( x \).

2. Solve the equation \( 3^x \times 27^x = 9^{4x-3} \)

3. Solve the equation \( \log_2 x + 5 \log_2 y = 2 - 6 = 0 \)

4. Solve the equation \( 0.25^x = 6^{-2x+3} \). Give your answer correct to 3 significant figures.

5. Given that \( \log_a 3 = m \) and \( \log_a 2 = n \), express \( \log_a 36 \) in terms of \( m \) and \( n \).

6. Given that \( \log_2 T - \log_4 V = 3 \), express \( T \) in terms of \( V \) 

7. Solve the equation \( 4^{2x-1} = 7^x \)

8. Solve the equation \( 32^{4x} = 4^{8x+6} \)

9. Given that \( \log_5 2 = m \) and \( \log_5 7 = p \), express \( \log_5 4.9 \) in terms of \( m \) and \( p \).

10. Solve the equation \( 2^{x+4} - 2^{x+3} = 1 \)

11. Solve the equation \( \log_2 4x - \log_3 (2x - 1) = 1 \)

12. Given that \( \log_m 2 = p \) and \( \log_m 3 = r \), express \( \log_m \left( \frac{27m}{4} \right) \) in terms of \( p \) and \( r \).

13. Solve the equation \( 8^{2x-3} = \frac{1}{\sqrt[4]{4^{x+2}}} \)

14. Given that \( \log_2 xy = 2 + 3 \log_2 x \), express \( y \) in terms of \( x \)

15. Solve the equation \( 2 + \log_3 (x - 1) = \log_3 x \)

16. Given that \( \log_2 b = x \) and \( \log_2 c = y \), express \( \log_4 \left( \frac{8b}{c} \right) \), in terms of \( x \) and \( y \).

17. Given that \( 9 \left( 3^{n-1} \right) = 27^n \), find the value of \( n \).

18. Solve the equation \( 16^{2x-3} = 8^{4x} \)

19. Given that \( \log_4 x = \log_2 3 \), find the value of \( x \).

20. Given \( 3^{n-3} \times 27^n = 243 \), find the value of \( n \).

21. Given that \( \log_8 p - \log_2 q = 0 \), express \( p \) in terms of \( q \)

22. Solve the equation: \( 3^{x+2} - 3^x = \frac{8}{9} \)

23. Given \( \log_2 3 = a \) and \( \log_2 5 = b \), express \( \log_8 45 \) in terms of \( a \) and \( b \)