

Classwork Exponential Functions

Please work all problems on a separate sheet of paper.

Solve each of the following exponential equations by expressing each side as a power of the same base and then equating the exponents.

1. $10^{3x+1} = \frac{1}{100}$

2. $3^{2x} = 81$

3. $25^{1-x} = \frac{1}{5}$

4. $e^{x-2} = \sqrt{e}$

5. $3^{2x^2} = 81$

6. $4^x = \frac{1}{\sqrt{2}}$

Solve the following exponential equations.

7. $4^x = 21$

8. $2^{5x} = 11$

9. $3^{x+1} = 16$

10. $9^{x-2} - 17 = 6$

11. $9e^x = 107$

12. $4e^{2x-3} = 120$

13. $3e^{4x+1} + 1 = 19$

14. $2^{8x+2} = 3^{5x-2}$

Solve the following logarithmic equations.

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

16. $\ln(5-2x) = 2$

17. $\log_4(x) + \log_4(x-12) = 3$

18. $\log_4(x+3) + \log_4(x-3) = 2$

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

20. $\log(2x-1) - \log(x-3) = 1$

21. $\log_6(3x) + \log_6(4) = \log_6(24)$

22. $\log_8(x+1) - \log_8(x) = \log_8(4)$

23. $\log_7(x) + \log_7(3x-11) = \log_7(4)$

24. $\ln(x+2) = \ln(x-4) + \ln(3)$