

Practice 23

FOR USE WITH SECTION 4.4

Solve each equation. Round your answers to the nearest hundredth.

1. $10^{2x} = 57$

2. $e^{4y/3} = 18$

3. $2 \cdot 10^{r-1} = 39$

4. $7e^{x/4} = 56$

5. $5^t = 26$

6. $4e^{n+2} + 3 = 45$

7. $3(0.8)^{2a} - 5 = 19$

8. $5 \cdot 3^x = 4 \cdot 2^x$

Evaluate each logarithm. Round your answer to the nearest hundredth.

9. $\log_3 14$

10. $\log_8 93$

11. $\log_{12} 5$

12. $\log_{14} 87$

13. $\log_{1/2} 9$

14. $\log_5 \frac{3}{4}$

15. $\log_6 0.28$

16. $\log_{1.5} 6.3$

Solve each equation. Be sure to check your solutions. Round decimal answers to the nearest hundredth.

17. $\log_2 x = -4$

18. $5 \ln \frac{3x}{4} = 2$

19. $\log_3 (1 - 8v) = 2$

20. $4 \log_7 (3w + 1) = 14$

21. $\log_5 (a + 3) - \log_5 (a - 1) = 1$

22. $\log_2 (y + 1) = 3 + \log_2 (y - 6)$

23. $\log_9 (4x + 1) - \log_9 (2x - 7) = \frac{1}{2}$

24. $\log_3 (\log_5 x) = 1$

25. A *mortgage* is a kind of loan that is usually repaid in equal monthly installments. The following formula gives the monthly payment M in terms of the amount of the loan P , the number of months n before the loan is fully repaid, and the monthly interest rate r :

$$M = \frac{rP}{1 - (1 + r)^{-n}}$$

a. Ariella borrows \$150,000 at 8.5% annual interest for 25 years, or 300 months. Calculate her monthly payment.

b. Suppose Ariella would like to have \$1150 as a monthly payment. With the same interest rate as in part (a), how many months would it be before the loan was repaid?