NAME _____ DATE _____ PERIOD _____

7-7 Practice

Base e and Natural Logarithms

Write an equivalent exponential or logarithmic equation.

1. $\ln 50 = x$

2. $\ln 36 = 2x$

3. $\ln 6 \approx 1.7918$

4. $\ln 9.3 \approx 2.2300$

5. $e^x = 8$

6. $e^5 = 10x$

7. $e^{-x} = 4$

8. $e^2 = x + 1$

Solve each equation or inequality. Round to four decimal places.

9. $e^x < 9$

10. $e^{-x} = 31$

11. $e^x = 1.1$

12. $e^x = 5.8$

13. $2e^x - 3 = 1$

14. $5e^x + 1 \geq 7$

15. $4 + e^x = 19$

16. $-3e^x + 10 < 8$

17. $e^{3x} = 8$

18. $e^{-4x} = 5$

19. $e^{0.5x} = 6$

20. $2e^{5x} = 24$

21. $e^{2x} + 1 = 55$

22. $e^{3x} - 5 = 32$

23. $9 + e^{2x} = 10$

24. $e^{-3x} + 7 \geq 15$

25. $\ln 4x = 3$

26. $\ln (-2x) = 7$

27. $\ln 2.5x = 10$

28. $\ln (x - 6) = 1$

29. $\ln (x + 2) = 3$

30. $\ln (x + 3) = 5$

31. $\ln 3x + \ln 2x = 9$

32. $\ln 5x + \ln x = 7$

33. INVESTING Sarita deposits \$1000 in an account paying 3.4% annual interest compounded continuously. Use the formula for continuously compounded interest, $A = Pe^{rt}$, where P is the principal, r is the annual interest rate, and t is the time in years.

a. What is the balance in Sarita's account after 5 years?

b. How long will it take the balance in Sarita's account to reach \$2000?

34. RADIOACTIVE DECAY The amount of a radioactive substance y that remains after t years is given by the equation $y = ae^{kt}$, where a is the initial amount present and k is the decay constant for the radioactive substance. If $a = 100$, $y = 50$, and $k = -0.035$, find t.