Solving Exponential and Logarithmic Equations Practice

Precise Practicer: Date:

Solve each of the following below. Round your answers to the nearest hundredth if applicable.

1. $ln(2x) = -3$

2. $log_4(3x + 15) = 3$

3. $log_9(0.1x) = -3$

4. $5^{1-x} = 2$

5. $1 + e^{-x} = 7$

6. $7^x - 2 = 68$

7. Anna bought a car worth $25,000 that has had its value decrease by 8% each year. How many years will it take for her car to be worth half of its original cost?

8. $8,000 is invested in a bank account that yields 1% interest per year, compounded continuously.

a. What is the value of the account after 9 years?

b. After how many years will the account be worth double of what it started?

9. The function $c = 108e^{-0.08t} + 75$ calculates the temperature, in degrees Fahrenheit, of a cup of coffee that was handed out a drive-thru window.

a. What is the temperature of the coffee in the instant that it is handed out the window?

b. After how many minutes is the coffee in the cup 98 degrees Fahrenheit? Round to the nearest whole number.

10. In the equation $log_3(a) = b,$ if b is a whole number which of the following cannot be a value for a?

a. 1 b. 3 c. 6 d. 9 e. 81

Challenge: Using the logarithm rules, expand the following expressions as much as possible.

11. $log_{12}(x \bullet 2y)$

12. $log_8(a^2 \div b^3)$

13. $log(x \div y^5)$

14. $ln(t^3 \bullet r \bullet s^5)$