SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Solve the problem.

1) Suppose the amount of a radioactive element remaining in a sample of 100 milligrams   1) _____
after x years can be described by $A(x) = 100e^{-0.01885x}$. How much is remaining after 211
years? Round the answer to the nearest hundredth of a milligram.

Decide whether the function is an exponential growth or exponential decay function and find the constant percentage
rate of growth or decay.

2) $f(x) = 20,138 \cdot 0.811^x$ (2.5) $f(x) = 7 \cdot 1.048^x$ 2) _____

Find the exponential function that satisfies the given conditions.

3) Initial value = 63, decreasing at a rate of 0.43% per week   3) _____

Determine a formula for the exponential function.

4)   4) _____

x	f(x)
-2	33
-1	23.1
0	16.17
1	11.319
2	7.9233

Solve the problem.

5) The number of students infected with the flu on a college campus after t days is modeled   5) _____
by the function $P(t) = \dfrac{440}{1 + 39e^{-0.3t}}$. What was the initial number of infected students?

6) The population of wolves in a state park after t years is modeled by the function   6) _____
$P(t) = \dfrac{1100}{1 + 99e^{-0.3t}}$. What is the maximum number of wolves possible in the park?

Solve the equation by changing it to logarithmic form.

7) $e^{-x} = \dfrac{1}{18}$ 7) _____

Rewrite the expression as a sum or difference or multiple of logarithms.

8) $\log_4 (\dfrac{x^{1/2}}{y^6})$ 8) _____

Use the product, quotient, and power rules of logarithms to rewrite the expression as a single logarithm. Assume that
all variables represent positive real numbers.

9) $4 \log_m x - 7 \log_m (x+5)$ 9) _____

Use the appropriate interest formula to find the amount that will be in an account, given the stated conditions.

10) P = $200, t = 6, r = 9% compounded continuously   10) _____

Solve the problem.

11) Find the future value accumulated in an annuity after investing periodic payments of $300 for 10 years at an annual interest rate of 5%, with payments made and credited 4 times per year.

11) _____

Determine the doubling time of the investment.

12) $1900 at 9% compounded quarterly

12) _____

Solve the problem.

13) Suppose you contribute $60 per month into a fund that earns 7.5% annual interest. What is the value of your investment after 30 years?

13) _____

14) Find the future value accumulated in an annuity after investing periodic payments of $50 for 19 years at an annual interest rate of 8%, with payments made and credited 12 times per year.

14) _____

15) Find the present value of a loan with an annual interest rate of 7.5% and periodic payments of $232.11 for a term of 3 years, with payments made and interest charged 12 times per year.

15) _____

Use the appropriate interest formula to find the amount that will be in an account, given the stated conditions.

16) P = $14,000, t = 3, r = 12%, n = 2

16) _____

Solve the equation.

17) $\log_3 (x - 4) + \log_3 (x - 4) = 2$

17) _____

Solve the equation. If necessary, round to thousandths.

18) $5^{(4x - 2)} = 24$

18) _____

Solve the equation algebraically.

19) $3 - \log_2(x + 6) = 2$

19) _____

Use the product, quotient, and power rules of logarithms to rewrite the expression as a single logarithm. Assume that all variables represent positive real numbers.

20) $4 \log_5 (4x + 1) + 5 \log_5 (2x + 6)$

20) _____

Rewrite the expression as a sum or difference or multiple of logarithms.

21) $\log_9 \left(\dfrac{\sqrt[7]{20}}{s^2 r} \right)$

21) _____

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