MAC 1105 Module Test 9

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve the equation. If necessary, round to thousandths.

1) $5e^{2x + 5} = 20$

    A) −1.807   B) −2.200   C) 3.193   D) 7.500

Use a change of base formula to evaluate the given logarithm. Approximate to three decimal places.

2) $\log_{\sqrt{6}} (64.7)$

    A) 0.389   B) 4.654   C) 0.215   D) 2.327

Solve the inequality.

3) $3^{-x} > \dfrac{1}{27}$

    A) $x < \dfrac{1}{9}$ B) $x > \dfrac{1}{3}$ C) $x > -3$ D) $x < 3$

Use the properties of logarithms to evaluate the expression.

4) $\log_a a^2$

    A) 1   B) a^2 C) $2\log_a a$ D) 2

Solve the problem.

5) At the end of t years, the future value of an investment of $7000 in an account that pays 7% APR compounded monthly is $S = 7000\left(1 + \dfrac{0.07}{12}\right)^{12t}$ dollars. Assuming no withdrawals or additional deposits, how long will it take for the investment to reach $21,000? Round to three decimal places.

    A) 12.592 years   B) 15.740 years   C) 18.888 years   D) 23.610 years

Solve the equation.

6) $400e^{0.284x} = 1600$ (Round to three decimal places.)

    A) 0.205   B) −0.205   C) 4.881   D) −4.881

Use the properties of logarithms to evaluate the expression.

7) $e^{\ln x^{39}}$

    A) x   B) $e^{x^{39}}$ C) $\ln x^{39}$ D) x^{39}

Solve the equation. If necessary, round to thousandths.

8) $5^{(5x - 1)} = 23$

    A) 0.590   B) 0.505   C) 0.190   D) 1.120

Solve.

9) Given that $\log_a 7 = 1.946$, and $\log_a 11 = 2.398$, find $\log_a \frac{7}{11}$.

    A) 0.812   B) –0.452   C) 0.452   D) 4.344

Rewrite as a single logarithm.

10) $(\log_t t - \log_t s) + 3 \log_t u$

    A) $\log_t \dfrac{t}{u3s}$ B) $\log_t \dfrac{3tu}{s}$ C) $\log_t \dfrac{tu3}{s}$ D) $\log_t tu3s$

Solve the problem.

11) Find the amount of money in an account after 4 years if $1800 is deposited at 5% annual interest compounded quarterly.

    A) $2197.61   B) $2187.91   C) $2193.13   D) $2195.80

12) Sumi Kato's savings account has a balance of $1663. After 19 years, what will the amount of interest be at 5.5% compounded annually?

    A) $3159.70   B) $2936.27   C) $2942.27   D) $2925.27

13) What will be the amount in an account with initial principal $9000 if interest is compounded continuously at an annual rate of 3.25% for 7 years?

    A) $2069.63   B) $9000.00   C) $9297.31   D) $11,299.12

14) $9000 is invested at 8% compounded quarterly. In how many years will the account have grown to $14,500? Round your answer to the nearest tenth of a year.

    A) 1.1 years   B) 13.2 years   C) 6.2 years   D) 6 years

Evaluate.

15) $P\left(1 + \dfrac{r}{k}\right)^{kn}$ for $P = \$14{,}000$, $n = 4$, $r = 11\%$, $k = 2$

    A) $21,485.61   B) $7485.61   C) $20,365.51   D) $21,252.99

Solve the problem.

16) How long would it take $7000 to grow to $35,000 at 6% compounded continuously? Round your answer to the nearest tenth of a year.

    A) 27.6 years   B) 27.1 years   C) 26.0 years   D) 26.8 years

17) An initial investment of $1260 is appreciated for 2 years in an account that earns 8% interest, compounded continuously. Find the amount of money in the account at the end of the period.

    A) $4780.02   B) $1478.62   C) $1617.87   D) $68,793.67

18) You have money in an account at 8% interest, compounded monthly. To the nearest year, how long will it take for your money to double?

    A) 7 years   B) 9 years   C) 12 years   D) 5 years

19) Assume the cost of a gallon of milk is $2.80. With continuous compounding, find the time it would take the cost to be 5 times as much (to the nearest tenth of a year), at an annual inflation rate of 6%.

    A) 9.9 years   B) 26.8 years   C) 0.1 year   D) 0.0 year

20) Find the amount of money in an account after 6 years if $2900 is deposited at 8% annual interest compounded monthly.

    A) $4601.94   B) $4664.47   C) $4642.99   D) $4679.16