10

NAME _____ DATE _____

Chapter 10, Quiz A (Lessons 10-1 and 10-2)

1. Simplify $x^{\sqrt{6}\sqrt{24}}$. 1. _____

2. Write the equation $5^{-2} = \frac{1}{25}$ in logarithmic form. 2. _____

3. Write the equation $\log_{10} 1000 = 3$ in exponential form. 3. _____

4. Evaluate $\log_{16} 4$. 4. _____

Solve each equation.

5. $3^{2r} = 9^{2r-1}$ 5. _____

6. $4^{7a} = 16^{5a-6}$ 6. _____

7. $9^{x-4} = \frac{1}{27}$ 7. _____

8. $\log_x \frac{1}{49} = -2$ 8. _____

9. $\log_6 x = 2$ 9. _____

10. $\log_8 (9x - 5) = \log_8 (3x + 49)$ 10. _____

10

NAME _____ DATE _____

Chapter 10, Quiz B (Lessons 10-3 and 10-4)

Solve each equation.

1. $\log_7 36 - \log_7 x = \log_7 4$ 1. _____

2. $\log_3 (3x + 10) = \log_3 x^2$ 2. _____

3. $\log_3 x = \frac{1}{2} \log_3 25 - 5 \log_3 2$ 3. _____

4. $\log_2 (x + 1) + \log_2 (x - 5) = 4$ 4. _____

5. What is the characteristic of log 3700? 5. _____

6. What is the characteristic of log 0.0642? 6. _____

7. What is the mantissa of log 64,725? 7. _____

8. Find log 0.0005713. Round your answer to four decimal places. 8. _____

9. Find antilog (0.4624 − 2). Round your answer to four decimal places. 9. _____

10. Find antilog 1.7293. Round your answer to four decimal places. 10. _____

10

NAME _____ DATE _____

Chapter 10, Quiz A (Lessons 10-1 and 10-2)

1. Simplify $x^{\sqrt{6}\sqrt{24}}$. — 1. x^{12}
2. Write the equation $5^{-2} = \frac{1}{25}$ in logarithmic form. — 2. $\log_5 \frac{1}{25} = -2$
3. Write the equation $\log_{10} 1000 = 3$ in exponential form. — 3. $10^3 = 1000$
4. Evaluate $\log_{16} 4$. — 4. $\frac{1}{2}$

Solve each equation.

5. $3^{2r} = 9^{2r-1}$ — 5. 1
6. $4^{7a} = 16^{5a-6}$ — 6. 4
7. $9^{x-4} = \frac{1}{27}$ — 7. 2.5
8. $\log_x \frac{1}{49} = -2$ — 8. 7
9. $\log_6 x = 2$ — 9. 36
10. $\log_8 (9x - 5) = \log_8 (3x + 49)$ — 10. 9

10

NAME _____ DATE _____

Chapter 10, Quiz B (Lessons 10-3 and 10-4)

Solve each equation.

1. $\log_7 36 - \log_7 x = \log_7 4$ — 1. 9
2. $\log_3 (3x + 10) = \log_3 x^2$ — 2. 5, -2
3. $\log_3 x = \frac{1}{2} \log_3 25 - 5 \log_3 2$ — 3. $\frac{5}{32}$
4. $\log_2 (x + 1) + \log_2 (x - 5) = 4$ — 4. 7
5. What is the characteristic of log 3700? — 5. _____
6. What is the characteristic of log 0.0642? — 6. _____
7. What is the mantissa of log 64,725? — 7. _____
8. Find log 0.0005713. Round your answer to four decimal places. — 8. _____
9. Find antilog (0.4624 − 2). Round your answer to four decimal places. — 9. _____
10. Find antilog 1.7293. Round your answer to four decimal places. — 10. _____

10

NAME _____ DATE _____

Chapter 10, Quiz C (Lessons 10-5 and 10-6)

Find the value of each of the following to four decimal places.

1. ln 1.9
2. ln 7.88
3. ln 0.399
4. antiln −0.026
5. antiln 2.8463
6. antiln 1.1995

Solve each equation. Round answers to three decimal places.

7. $350 = e^{0.05x}$
8. $6 = e^{4k}$
9. $6^x = 10$
10. $y = \log_9 760$

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

10

NAME _____ DATE _____

Chapter 10, Quiz D (Lesson 10-7)

Solve each problem.

1. Natalie invested $1050 in a two-year certificate of deposit that has an annual yield of 7.03%. Estimate the amount of interest she earned each year. Then use the simple interest formula to compute the interest. Round the computed answer to the nearest cent.

2. Jason invests $1000 in an account that pays 7% interest compounded continuously. To the nearest cent, how much will be in the account at the end of 2 years? Use the formula $A = Pe^{rt}$.

3. The Morgans bought a house worth $125,000. Assuming that the house will appreciate 8% per year, what will the house be worth in eight years?

4. Elaine inherited $1000 from her grandmother. She plans to give her niece $3000 when the niece graduates from high school. If she puts the inheritance in the bank and earns 10% interest compounded continuously, when will she have the $3000 for the gift? Use $A = Pe^{rt}$.

5. The Allen Electronic Company has a piece of machinery valued at $60,000. It depreciates at 20% per year. After how many years will the value have depreciated to $15,000?

1. _____
2. _____
3. _____
4. _____
5. _____

10

NAME _____ DATE _____

Chapter 10, Quiz C (Lessons 10-5 and 10-6)

Find the value of each of the following to four decimal places.

1. ln 1.9
2. ln 7.88
3. ln 0.399
4. antiln −0.026
5. antiln 2.8463
6. antiln 1.1995

Solve each equation. Round answers to three decimal places.

7. $350 = e^{0.05x}$
8. $6 = e^{4k}$
9. $6^x = 10$
10. $y = \log_9 760$

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. 117.159
8. 0.449
9. 1.285
10. 3.019

10

NAME _____ DATE _____

Chapter 10, Quiz D (Lesson 10-7)

Solve each problem.

1. Natalie invested $1050 in a two-year certificate of deposit that has an annual yield of 7.03%. Estimate the amount of interest she earned each year. Then use the simple interest formula to compute the interest. Round the computed answer to the nearest cent.

2. Jason invests $1000 in an account that pays 7% interest compounded continuously. To the nearest cent, how much will be in the account at the end of 2 years? Use the formula $A = Pe^{rt}$.

3. The Morgans bought a house worth $125,000. Assuming that the house will appreciate 8% per year, what will the house be worth in eight years?

4. Elaine inherited $1000 from her grandmother. She plans to give her niece $3000 when the niece graduates from high school. If she puts the inheritance in the bank and earns 10% interest compounded continuously, when will she have the $3000 for the gift? Use $A = Pe^{rt}$.

5. The Allen Electronic Company has a piece of machinery valued at $60,000. It depreciates at 20% per year. After how many years will the value have depreciated to $15,000?

1. _____
2. $1150.27
3. _____
4. 11 years
5. _____

NAME _____ DATE _____ PERIOD ____

10

Chapter 10 Quiz

(Lessons 10–4 and 10–5)

SCORE ____

Use a calculator to evaluate each expression to four decimal places.

1. log 1.5 — 1. _____
2. ln 4.1 — 2. _____

For Questions 3–7, solve each equation or inequality. Round to four decimal places.

3. $4^{2m} = 130$ — 3. _____
4. $5^{x+4} = 2^{3x}$ — 4. _____
5. $7^{t-5} < 21.5$ — 5. _____
6. $\ln (x + 5) = 3$ — 6. _____
7. $4 + 2e^{5x} \geq 28$ — 7. _____

8. Express $\log_3 25$ in terms of common logarithms. Then approximate its value to four decimal places. — 8. _____

9. Write an equivalent logarithmic equation for $e^3 = 2x$. — 9. _____

10. Evaluate $e^{\ln 0.3}$. — 10. _____

NAME _____ DATE _____ PERIOD ____

10

Chapter 10 Quiz

(Lesson 10–6)

SCORE ____

1. A substance decays according to the equation $y = ae^{-0.0025t}$, where t is in minutes. Find the half-life of the substance. Round to the nearest tenth. — 1. _____

2. A-1 Electric has a piece of machinery valued at $55,000. It depreciates at a rate of 12.5% per year. After how many years will the value have depreciated to $38,000? Round to the nearest tenth. — 2. _____

3. **Standardized Test Practice** In 1925, the population of a city was 90,000. Since then, the population has increased by 2.1% per year. If it continues to grow at this rate, what will the population be in 2020? — 3. _____

   A. 4,073,333 **B.** 136,382 **C.** 648,169 **D.** 6.6×10^{12}

4. The Morgans bought a house worth $125,000. Assuming that the house will appreciate 8% per year, what will the house be worth in eight years? Round to the nearest dollar. — 4. _____

5. A type of bacteria doubles in number every 25 minutes. Find the constant k for this type of bacteria, then write the equation for modeling this exponential growth. — 5. _____

NAME 1y DATE _____ PERIOD _____

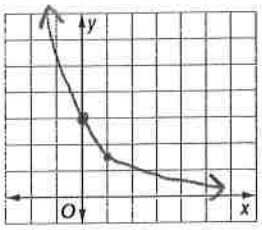
10

Chapter 10 Quiz

(Lessons 10–1 and 10–2)

SCORE _____

(1) Sketch the graph of $y = 3\left(\frac{1}{2}\right)^x$. Then state the function's domain and range.

1. 

D: $\{x \mid -\infty < x < \infty\}$
R: $\{y \mid y > 0\}$

2. Write an exponential function whose graph passes through the points (0, −5) and (−2, −20). Then determine whether the function represents exponential *growth* or *decay*.

(3) Simplify $3^{\sqrt{5}} \cdot 3^{2\sqrt{5}}$. 3. $3^{3\sqrt{5}}$

(4) Solve $\left(\frac{1}{3}\right)^m = 27^{m+2}$. 4. $-\frac{3}{2}$

(5) Solve $25^{4t+1} \geq 125^{2t}$. 5. $t \geq -1$

(6) Write the equation $81^{\frac{1}{2}} = 9$ in logarithmic form. 6. $\log_{81} 9 = \frac{1}{2}$

(7) Write the equation $\log_{216} 36 = \frac{2}{3}$ in exponential form. 7. $216^{\frac{2}{3}} = 36$

(8) Evaluate $\log_{16} 64$. 8. 1.5

(9) Solve $\log_{16} n = -\frac{1}{2}$. 9. .25

(10) Solve $\log_5 (4x - 1) \geq \log_5 (x + 2)$. 10. $x \geq 1$

Assessment

NAME _____ DATE _____ PERIOD _____

10

Chapter 10 Quiz

(Lesson 10–3)

SCORE _____

Use $\log_5 2 \approx 0.4307$ and $\log_5 3 \approx 0.6826$ to approximate the value of each expression.

1. $\log_5 \frac{10}{3}$ 1. _____

2. $\log_5 24$ 2. _____

Solve each equation.

(3) $\log_7 36 - \log_7 (2x) = \log_7 4$ 3. 4.5

(4) $\log_3 x = \frac{1}{2} \log_3 25 - 5 \log_3 2$ 4. $\frac{5}{32}$

(5) $\log_2 (x + 1) + \log_2 (x - 5) = 4$ 5. 7

NAME _____ DATE _____ PERIOD _____

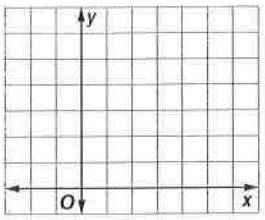
10

Chapter 10 Quiz

(Lessons 10–1 and 10–2)

SCORE _____

(1) Sketch the graph of $y = 3\left(\frac{1}{2}\right)^x$. Then state the function's domain and range.

1. 

2. Write an exponential function whose graph passes through the points $(0, -5)$ and $(-2, -20)$. Then determine whether the function represents exponential *growth* or *decay*.

(3) Simplify $3^{\sqrt{5}} \cdot 3^{2\sqrt{5}}$. 3. _____

(4) Solve $\left(\frac{1}{3}\right)^m = 27^{m+2}$. 4. _____

(5) Solve $25^{4t+1} \geq 125^{2t}$. 5. _____

(6) Write the equation $81^{\frac{1}{2}} = 9$ in logarithmic form. 6. _____

(7) Write the equation $\log_{216} 36 = \frac{2}{3}$ in exponential form. 7. _____

(8) Evaluate $\log_{16} 64$. 8. _____

(9) Solve $\log_{16} n = -\frac{1}{2}$. 9. _____

(10) Solve $\log_5 (4x - 1) \geq \log_5 (x + 2)$. 10. _____

Assessment

NAME _____ DATE _____ PERIOD _____

10

Chapter 10 Quiz

(Lesson 10–3)

SCORE _____

Use $\log_5 2 \approx 0.4307$ and $\log_5 3 \approx 0.6826$ to approximate the value of each expression.

1. $\log_5 \frac{10}{3}$ 1. _____

2. $\log_5 24$ 2. _____

Solve each equation.

(3) $\log_7 36 - \log_7 (2x) = \log_7 4$ 3. _____

(4) $\log_3 x = \frac{1}{2} \log_3 25 - 5 \log_3 2$ 4. _____

(5) $\log_2 (x + 1) + \log_2 (x - 5) = 4$ 5. _____

NAME _____ DATE _____ PERIOD ____

Chapter 10 Quiz

(Lessons 10–4 and 10–5)

SCORE ____

Use a calculator to evaluate each expression to four decimal places.

1. log 1.5
2. ln 4.1

For Questions 3–7, solve each equation or inequality. Round to four decimal places.

3. $4^{2m} = 130$
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6. $\ln(x + 5) = 3$
7. $4 + 2e^{5x} \geq 28$

8. Express $\log_3 25$ in terms of common logarithms. Then approximate its value to four decimal places.

9. Write an equivalent logarithmic equation for $e^3 = 2x$.

10. Evaluate $e^{\ln 0.3}$.

1. _____
2. _____
3. 1.7556 / $\frac{\ln 130}{2\ln 4}$
4. 13.6972 / $\frac{-4\ln 3}{(\ln 5 - 3\ln 2)}$
5. 6.5767 / $\frac{\ln 21.5 + 5\ln 7}{\ln 7}$
6. 15.0855 / $e^3 - 5$
7. $\frac{\ln 12}{5}$
8. _____
9. $3 = \ln 2x$
10. 0.3

NAME _____ DATE _____ PERIOD ____

Chapter 10 Quiz

(Lesson 10–6)

SCORE ____

1. A substance decays according to the equation $y = ae^{-0.0025t}$, where t is in minutes. Find the half-life of the substance. Round to the nearest tenth.

2. A-1 Electric has a piece of machinery valued at \$55,000. It depreciates at a rate of 12.5% per year. After how many years will the value have depreciated to \$38,000? Round to the nearest tenth.

3. **Standardized Test Practice** In 1925, the population of a city was 90,000. Since then, the population has increased by 2.1% per year. If it continues to grow at this rate, what will the population be in 2020?

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5. A type of bacteria doubles in number every 25 minutes. Find the constant k for this type of bacteria, then write the equation for modeling this exponential growth.

1. _____
2. _____
3. _____
4. _____
5. _____