

## Ch. 8 Practice Test

\*Ms. Chan

## Algebra 2

## Short Answer

**Write the equation in logarithmic form.**

1.  $6^3 = 216$

**Evaluate the logarithm.**

2.  $\log_2 \frac{1}{16}$

3.  $\log_5 125$

**State the property or properties of logarithms used to rewrite the expression.**

4.  $\log \sqrt[4]{16x^2} = \frac{1}{2} \log 4x$

5.  $\log_3 36 - \log_3 12 = \log_3 3$

6.  $\log_4 4 + \log_4 4 = \log_4 16$

**Write the expression as a single logarithm.**

7.  $3 \log_b t + 5 \log_b y$

**Expand the logarithmic expression.**

8.  $\log_3 \frac{a}{8}$

9.  $\log_4 7b^4$

10. Use the properties of logarithms to evaluate  $3 \log_2 2 - \log_2 2 + 2 \log_2 4$ .

11. Solve  $13^{8x} = 43$ . Round to the nearest ten-thousandth.

12. Solve  $\frac{1}{9} = 27^{2x-5}$ .

13. Use the Change of Base Formula to evaluate  $\log_5 39$ . Then convert  $\log_5 39$  to a logarithm in base 2. Round to the nearest thousandth.

14. Solve  $4^{x-2} = 89$ .

15. Solve  $\log(6x + 5) = 2$ .

16. Solve  $\log(x + 3) - \log x = 2$ .

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17. Solve  $3 \log x - \log 6 + \log 2.4 = 9$ .

**Write the expression as a single natural logarithm.**

18.  $2 \ln 3 + 6 \ln y$

19.  $6 \ln b - \frac{1}{3} (\ln a + \ln c^3)$

20. Simplify  $\ln e^5$ .

21. Solve  $\ln(4x + 1) = 4$ . Round to the nearest thousandth.

22. Solve  $\ln 5 + \ln 2x = 3$ .

**Use natural logarithms to solve the equation. Round to the nearest thousandth.**

23.  $3e^{4x} + 11 = 23$

24.  $e^x = \frac{5}{8}$

25.  $e^{3x} = 2.9$

**Ch. 8 Practice Test  
Answer Section**

**\*Ms. Chan**

**Algebra 2**

**SHORT ANSWER**

1. ANS:  
 $\log_6 216 = 3$

DIF: L1                      REF: 8-3 Logarithmic Functions as Inverses  
OBJ: 8-3.1 Writing and Evaluating Logarithmic Expressions

2. ANS:  
-4

DIF: L2                      REF: 8-3 Logarithmic Functions as Inverses  
OBJ: 8-3.1 Writing and Evaluating Logarithmic Expressions

3. ANS:  
3

DIF: L1                      REF: 8-3 Logarithmic Functions as Inverses  
OBJ: 8-3.1 Writing and Evaluating Logarithmic Expressions

4. ANS:  
Power Property

DIF: L2                      REF: 8-4 Properties of Logarithms  
OBJ: 8-4.1 Using the Properties of Logarithms

5. ANS:  
Quotient Property

DIF: L1                      REF: 8-4 Properties of Logarithms  
OBJ: 8-4.1 Using the Properties of Logarithms

6. ANS:  
Product Property

DIF: L1                      REF: 8-4 Properties of Logarithms  
OBJ: 8-4.1 Using the Properties of Logarithms

7. ANS:  
 $\log_b(t^3y^5)$

DIF: L2                      REF: 8-4 Properties of Logarithms  
OBJ: 8-4.1 Using the Properties of Logarithms

8. ANS:  
 $\log_3 a - \log_3 8$

DIF: L1                      REF: 8-4 Properties of Logarithms  
OBJ: 8-4.1 Using the Properties of Logarithms

9. ANS:  
 $\log_4 7 + 4 \log_4 b$
- DIF: L1                      REF: 8-4 Properties of Logarithms  
 OBJ: 8-4.1 Using the Properties of Logarithms
10. ANS:  
 6
- DIF: L2                      REF: 8-4 Properties of Logarithms  
 OBJ: 8-4.1 Using the Properties of Logarithms
11. ANS:  
 0.1833
- DIF: L1                      REF: 8-5 Exponential and Logarithmic Equations  
 OBJ: 8-5.1 Solving Exponential Equations
12. ANS:  
 $\frac{13}{6}$
- DIF: L2                      REF: 8-5 Exponential and Logarithmic Equations  
 OBJ: 8-5.1 Solving Exponential Equations
13. ANS:  
 $2.276; \log_2 4.844$
- DIF: L1                      REF: 8-5 Exponential and Logarithmic Equations  
 OBJ: 8-5.1 Solving Exponential Equations
14. ANS:  
 5.2379
- DIF: L2                      REF: 8-5 Exponential and Logarithmic Equations  
 OBJ: 8-5.1 Solving Exponential Equations
15. ANS:  
 $\frac{95}{6}$
- DIF: L1                      REF: 8-5 Exponential and Logarithmic Equations  
 OBJ: 8-5.2 Solving Logarithmic Equations
16. ANS:  
 0.0303
- DIF: L2                      REF: 8-5 Exponential and Logarithmic Equations  
 OBJ: 8-5.2 Solving Logarithmic Equations
17. ANS:  
 1357.2
- DIF: L2                      REF: 8-5 Exponential and Logarithmic Equations  
 OBJ: 8-5.2 Solving Logarithmic Equations

18. ANS:  
 $\ln 9y^6$
- DIF: L1                      REF: 8-6 Natural Logarithms                      OBJ: 8-6.1 Natural Logarithms
19. ANS:  
 $\ln \frac{b^6}{c^3 \sqrt{a}}$
- DIF: L2                      REF: 8-6 Natural Logarithms                      OBJ: 8-6.1 Natural Logarithms
20. ANS:  
 3
- DIF: L2                      REF: 8-6 Natural Logarithms                      OBJ: 8-6.1 Natural Logarithms
21. ANS:  
 13.400
- DIF: L1                      REF: 8-6 Natural Logarithms  
 OBJ: 8-6.2 Natural Logarithmic and Exponential Equations
22. ANS:  
 2.0086
- DIF: L2                      REF: 8-6 Natural Logarithms  
 OBJ: 8-6.2 Natural Logarithmic and Exponential Equations
23. ANS:  
 0.347
- DIF: L2                      REF: 8-6 Natural Logarithms  
 OBJ: 8-6.2 Natural Logarithmic and Exponential Equations
24. ANS:  
 -0.47
- DIF: L1                      REF: 8-6 Natural Logarithms  
 OBJ: 8-6.2 Natural Logarithmic and Exponential Equations
25. ANS:  
 0.3549
- DIF: L1                      REF: 8-6 Natural Logarithms  
 OBJ: 8-6.2 Natural Logarithmic and Exponential Equations