Algebra 2 CP TEST REVIEW 8.4-8.6 **Name** _____

SHOW ALL WORK AND ANSWERS ON SEPARATE PAPER.

NON-CALCULATOR PART

Find the value of x.

1. $\log_{15} 15 = x$
2. $\log_4 x = 3$
3. $\log_x \frac{1}{16} = -2$
4. $\log_{49} x = 1$
5. $\log_{144} x = \frac{1}{2}$
6. $\log_x 81 = 4$

Expand each expression.

7. $\log_2 \frac{y}{5}$
8. $\ln 4x^2$
9. $\log_7 \frac{1}{2}ab^3$
10. $\ln \frac{2}{c^2 d}$

Condense each expression.

11. $\log_3 8 - \log_3 x$
12. $\ln 4 + 2\ln g - 3\ln h$
13. $2\log_5 2 + \frac{1}{2}\log_5 z$

Evaluate each expression.

14. $5^{\log_5 19} \log_4 4^3$
15. $\ln e^7 - 2e^{\ln 4}$
16. $\log_6 36 + \log_2 \frac{1}{2}$

Solve each equation. Check for extraneous solutions.

17. $\log_5(6-2x) = \log_5(x-6)$
18. $\log_3(x^2-12) = \log_3 4x$

Solve each equation.

19. $10^{4x+1} = 1000^{x+2}$
20. $\left(\frac{1}{4}\right)^{x+7} = 4^{2x}$
21. $2^x + 6 = 38$

CALCULATOR PART

Use the change of base formula to rewrite each expression. Then use a calculator to evaluate the expression. Round to three decimal places.

22. $\log_{18} 29$
23. $\log_{1/2} 22$
24. $\log_{35} 5$

Solve each equation.

25. $12^x = 33$
26. $5^{0.2x} - 3 = 27$
27. $18 \ln x = 36$
28. $\ln(x+4) = 9$

Use the formula $N(t) = N_0 e^{-0.00012t}$ to solve.

29. A plank of wood is found at an ancient city in an archeological dig. If the original amount of carbon-14 was 600 grams and the amount present now is 570 grams, how old is the plank of wood?
30. A pair of antlers is found in the woods and contains 90% of its original amount of carbon-14. Estimate the age of the pair of antlers.