Advanced Algebra
Homework 8.5
Properties of Logarithms

Name _____

Period _____

SHOW ALL WORK.

Complete Parts A & B OR Parts B & C

PART A:

Expand the expression.

1. $\log_3 4x$

2. $\ln 15x$

3. $\log 3x^4$

4. $\log_5 x^5$

5. $\log_2 \frac{2}{5}$

6. $\ln \frac{12}{5}$

Condense the expression into a single log.

7. $\log_4 7 - \log_4 10$

8. $\ln 12 - \ln 4$

9. $2\log x + \log 11$

10. $6\ln x + 4\ln y$

Use the Change of Base Formula to evaluate the logarithm. *(Round answer to nearest thousandth)*

11. $\log_4 7$

12. $\log_5 13$

13. $\log_3 15$

14. $\log_8 22$

PART B:

Expand the expression.

15. $\log_4 \frac{x}{3y}$

16. $\ln 4x^2 y$

17. $\log_7 5x^3 yz^2$

18. $\log_6 36x^2$

19. $\ln x^2 y^{\frac{1}{3}}$

20. $\log 10x^3$

Condense the expression into a single log.

21. $5\log x - 4\log y$

22. $5\log_4 2 + 7\log_4 x + 4\log_4 y$

23. $\ln 40 + 2\ln\frac{1}{2} + \ln x$

24. $\log_5 4 + \frac{1}{3}\log_5 x$

Use the Change of Base Formula to evaluate the logarithm. *(Round answer to nearest thousandth)*

25. $\log_6 \frac{24}{5}$

26. $\log_2 \frac{15}{7}$

27. $\log_3 \frac{9}{40}$

28. $\log_7 \frac{3}{16}$

PART C:

Expand the expression.

29. $\log_2 \sqrt{x}$

30. $\ln \frac{6x^2}{y^4}$

31. $\ln \sqrt[4]{x^3}$

32. $\log_3 \sqrt{9x}$

Condense the expression into a single log.

33. $6\ln 2 - 4\ln y$

34. $2(\log_3 20 - \log_3 4) + 0.5\log_3 4$