

Name: _____ Date: _____ Row: _____ Period: _____

NOTES SECTION 8.5: PROPERTIES OF LOGARITHMS – DAY 2

Use the properties of logarithms to rewrite the expression in terms of $\log 3$ and $\log 4$. Then use $\log 3 \approx 0.477$ and $\log 4 \approx 0.602$ to approximate the expression.

- | | | |
|-----------------------------------|----------------------|------------------------------------|
| 1. $\log\left(\frac{3}{4}\right)$ | 2. $\log 12$ | 3. $\log 9$ |
| 4. $\log 16$ | 5. $\log\frac{1}{4}$ | 6. $\log\left(\frac{4}{27}\right)$ |

Expand the expression.

- | | | |
|---------------------------|--------------------------------|------------------------------|
| 7. $\log_6 3x$ | 8. $\log_2 \frac{x}{5}$ | 9. $\log xy^2$ |
| 10. $\log_4 \frac{xy}{3}$ | 11. $\log_3 \sqrt{x} y z$ | 12. $\log_5 2\sqrt{x}$ |
| 13. $\log \frac{x^2}{4}$ | 14. $\log \frac{10}{\sqrt{x}}$ | 15. $\log_2 \frac{x^2 y}{z}$ |

Condense the expression.

- | | |
|---|--|
| 16. $\log_3 7 - \log_3 x$ | 17. $2 \log_5 x + \log_5 3$ |
| 18. $\log_4 5 + \log_4 x + \log_4 y$ | 19. $\frac{1}{2} \log x - \log 4$ |
| 20. $\frac{2}{3} \log_2 x - 3 \log_2 y$ | 21. $\log_3 4 + 2 \log_3 x - \log_3 5$ |

Use the change-of-base formula to rewrite the expression. Then use a calculator to evaluate the expression. Round your result to three decimal places if necessary.

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|---------------------|----------------------|--------------------|
| 22. $\log_3 12$ | 23. $\log_6 2$ | 24. $\log_4 0.5$ |
| 25. $\log_{0.8} 12$ | 26. $\log_{1.5} 2.8$ | 27. $\log_{1/2} 6$ |

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