

Secondary Math III
Expanding & Condensing
Assignment 10.2

Name _____
Period _____

Expand each expression. Simplify where possible:

1. $\log_3 3x$

2. $\log \frac{2x}{5}$

3. $\ln \sqrt{2x}$

4. $\log_7 2xy^3$

5. $\log_5 25\sqrt[3]{x}$

6. $\log_6 \frac{x^2}{6y}$

7. $\log_4 \frac{x+1}{2}$

8. $\log \frac{(x-3)^2}{\sqrt{x}}$

9. $\ln \frac{x}{y^2z}$

Condense each expression. Simplify where possible:

10. $\log_7 4 + \log_7 2$

11. $\log_3 + \log x + \log 5$

12. $2 \ln x - \ln(x-3) + \ln 6$

13. $\log_2 4 + 3 \log_2 x + \log_2 y$

14. $\ln 3 + \frac{1}{2} \ln x - \ln 18$

15. $\log_3(x+2) - \log_3 5$

16. $2 \log x - \log y + 4 \log z$

17. $3 \ln(x+1) + 2 \ln y - \ln y + \ln 2$

18. $2 \log x - \log(x-4)$

Review:

Evaluate the logarithm without a calculator:

19. $\log_3 \frac{1}{3}$

20. $\log_2 16$

21. $\log_5 \frac{1}{125}$

Given $\log_a 2 \approx 0.356$, $\log_a 3 \approx 0.565$, and $\log_a 5 \approx 0.827$, use the properties of logarithms to evaluate:

22. $\log_a 30$

23. $\log_a 25$

24. $\log_a \frac{3}{2}$

ACT Practice:

25. If $2 \log_3 x - \frac{1}{2} \log_3 y + \log_3 z$ were written as a single logarithm, to what would it be equal?

A. $\log_3 \frac{x^2 z}{\sqrt{y}}$

B. $\log_3 \frac{x^2}{z\sqrt{y}}$

C. $\log_3 \frac{xz}{y}$

D. $\log_3 \frac{4xz}{y}$

E. $\log_3(x^2 - \frac{y}{2} + z)$