Name Homework Guide

Date _____

1. Condense:
$\ln 3 + \ln x - \ln y - 2\ln z$

$\ln 3 + \ln x - \ln y - \ln z^2$

$\ln\left(\frac{3x}{yz^2}\right)$

2. Condense:
$\ln 5 + \frac{1}{2}\ln x + 2\ln z$

$\ln 5\sqrt{x} \cdot z^2$

3. Condense:
$\log_5 9 + \frac{1}{2}\log_5 k + 2\log_5 p$

$\log_5 9 + \log_5 k^{\frac{1}{2}} + \log_5 p^2$

$\log_5 9 + \log_5 \sqrt{k} + \log_5 p^2$

$\log_5 9\sqrt{k} \cdot p^2$

4. Condense:
$\ln 4 + 3\ln x - 5\ln y$

$\ln \frac{4x^3}{y^5}$

5. Condense:
$\log_3 a - 2\log_3 b - 3\log_3 c$

$\log_3 a - \log_3 b^2 - \log_3 c^3$

$\log_3 \frac{a}{b^2c^3}$

6. Condense:
$\log x + 2\log y + 3\log z - \log 5$

$\log \frac{xy^2z^3}{5}$

7. Condense:
$2\log_3 x + \log_3 y$

$\log_3 x^2 + \log_3 y$

$\log_3 x^2y$

8. Condense:
$\log 5 + \log x - \log y$

$\log \frac{5x}{y}$

9. Condense:
$3\log_3 x - \log_3 7 - 4\log_3 y$

$\log_3 x^3 - \log_3 7 - \log_3 y^4$

$\log_3 \frac{x^3}{7y^4}$

10. Condense:
$3\log_5 3 + 2\log_5 a - \log_5 b - 2\log_5 c$

$\log_5 \frac{27a^2}{bc^2}$

Name _____ Date _____

11. Solve

$3^{3x-5}+2=83$

$-2 \quad -2$

$3^{3x-5}=81$

$3^{3x-5}=3^4$

$3x-5=4$

$+5 \quad +5$

$\frac{3x}{3}=\frac{9}{3}$

$x=3$

12. Solve

$\log_4(5x-4)=2$

$x=4$

13. Solve

$2\left(5^{x-2}\right)+11=261$

$-11 \quad -11$

$\frac{2(5^{x-2})}{2}=\frac{250}{2}$

$5^{x-2}=125$

$5^{x-2}=5^3$

$x-2=3$

$+2 \quad +2$

$x=5$

14. Solve

$-15\log_2(3x+2)=-45$

$x=2$

15. Expand

$\ln 2a^2b^3$

$\ln 2+\ln a^2+\ln b^3$

$\ln 2+2\ln a+3\ln b$

16. Expand

$\log_2 \frac{3\sqrt{b}}{a^4c^2}$

$\log_2 3+\frac{1}{2}\log_2 b-4\log_2 a-2\log_2 C$

17. Expand

$\log \frac{3x^4}{y\sqrt[3]{z}}$

$\log 3+\log x^4-\log y^3-\log z^{1/2}$

$\log 3+4\log x-3\log y-\frac{1}{2}\log z$

18. Expand

$\log_2 w^3k^5\sqrt[4]{n}$

$3\log_2 w+5\log_2 k+\frac{1}{4}\log_2 n$