Math 3   Name_____
PRACTICE Quiz 7.3-7.4 Expanding and Condensing Logarithms

Simplify the expression.

1) $\log_7 \left(5 \cdot 6^6\right)^3$

2) $\log_2 \left(7^6 \cdot 5^2\right)$

3) $\log_3 \left(\dfrac{x^3}{y}\right)^4$

4) $\ln \left(u^4 \cdot v\right)^4$

5) $\log_5 \left(xy^4\right)^2$

6) $\log_4 \left(\dfrac{x^6}{y}\right)^6$

Condense each expression to a single logarithm.

7) $15\log_4 u + 5\log_4 v$

8) $\dfrac{\log_3 x}{2} + \dfrac{\log_3 y}{2} + \dfrac{\log_3 z}{2}$

9) $20\log_6 x - 5\log_6 y$

10) $4\log_8 11 + \dfrac{\log_8 3}{3}$

11) $2\log_9 11 - 4\log_9 5$

12) $2\log_5 w + \dfrac{\log_5 u}{2}$

Math 3   Name_____

PRACTICE Quiz 7.3-7.4 Expanding and Condensing Logarithms

Simplify the expression.

1) $\log_7 \left(5 \cdot 6^6\right)^3$

$\qquad 3\log_7 5 + 18\log_7 6$

2) $\log_2 \left(7^6 \cdot 5^2\right)$

$\qquad 6\log_2 7 + 2\log_2 5$

3) $\log_3 \left(\dfrac{x^3}{y}\right)^4$

$\qquad 12\log_3 x - 4\log_3 y$

4) $\ln \left(u^4 \cdot v\right)^4$

$\qquad 16\ln u + 4\ln v$

5) $\log_5 \left(xy^4\right)^2$

$\qquad 2\log_5 x + 8\log_5 y$

6) $\log_4 \left(\dfrac{x^6}{y}\right)^6$

$\qquad 36\log_4 x - 6\log_4 y$

Condense each expression to a single logarithm.

7) $15\log_4 u + 5\log_4 v$

$\qquad \log_4 \left(v^5 u^{15}\right)$

8) $\dfrac{\log_3 x}{2} + \dfrac{\log_3 y}{2} + \dfrac{\log_3 z}{2}$

$\qquad \log_3 \sqrt{zyx}$

9) $20\log_6 x - 5\log_6 y$

$\qquad \log_6 \dfrac{x^{20}}{y^5}$

10) $4\log_8 11 + \dfrac{\log_8 3}{3}$

$\qquad \log_8 \left(11^4 \sqrt[3]{3}\right)$

11) $2\log_9 11 - 4\log_9 5$

$\qquad \log_9 \dfrac{11^2}{5^4}$

12) $2\log_5 w + \dfrac{\log_5 u}{2}$

$\qquad \log_5 \left(w^2 \sqrt{u}\right)$