Algebra 2 Name_____

Properties of Logs

Date_____ Block____

Use the Change of Base forumal to rewrite the expression. Then use a calculator to approximate each to the nearest thousandth.

1) $\log_6 33$

2) $\log_3 26$

3) $\log_3 3.2$

4) $\log_2 57$

5) $\ln 1.1$

Condense each expression to a single logarithm.

6) $2\log_8 x - 10\log_8 y$

7) $6\log_6 a + 2\log_6 b$

8) $3\ln u - 6\ln v$

9) $2\log x + 12\log y$

10) $4\log_6 x + 2\log_6 y$

Expand each logarithm.

11) $\log_7 (u^4 \cdot v)^3$

12) $\log_9 \left(\frac{a^4}{b}\right)^6$

13) $\log_9 \left(\frac{x^5}{y}\right)^2$

14) $\log_9 \left(\frac{x^5}{y}\right)^3$

15) $\log_2 \left(z^3\sqrt{x}\right)$

Use the properties of logarithms and the logarithms provided to rewrite each logarithm in terms of the variables given.

16) $\log_6 10 = A$
$\log_6 4 = B$
$\log_6 9 = C$
Find $\log_6 \frac{1}{16}$

17) $\log_8 6 = M$
$\log_8 7 = P$
$\log_8 9 = Q$
Find $\log_8 81$

18) $\log_5 4 = A$
$\log_5 6 = B$
$\log_5 7 = C$
Find $\log_5 \frac{5}{6}$

19) $\log_6 10 = A$
$\log_6 8 = B$
$\log_6 9 = C$
Find $\log_6 \frac{1}{100}$

20) $\log_5 7 = X$
$\log_5 8 = Y$
$\log_5 6 = Z$
Find $\log_5 \frac{1}{36}$

Answers to Properties of Logs

1) 1.951

2) 2.966

3) 1.059

4) 5.833

5) 0.095

6) $\log_8 \frac{x^2}{y^{10}}$

7) $\log_6 \left(b^2 a^6\right)$

8) $\ln \frac{u^3}{v^6}$

9) $\log \left(y^{12} x^2\right)$

10) $\log_6 \left(y^2 x^4\right)$

11) $12 \log_7 u + 3 \log_7 v$

12) $24 \log_9 a - 6 \log_9 b$

13) $10 \log_9 x - 2 \log_9 y$

14) $15 \log_9 x - 3 \log_9 y$

15) $3 \log_2 z + \frac{\log_2 x}{2}$

16) $-2B$

17) $2Q$

18) $1 - B$

19) $-2A$

20) $-2Z$