unit 5

Unit 4 Review

Logs and Exponentials

1. Write the following in exponential form:

(a) $\log_3 x = 9$ $3^9 = X$ =

(b) $\log_2 8 = x$ $2^X = 8$ $X = 3$

(c) $\log_3 27 = x$ $3^X = 27$ $X = 3$

(d) $\log_4 x = 3$ $4^3 = X = 64$

(e) $\log_2 y = 5$ $2^5 = Y = 32$

(f) $\log_5 y = 2$ $5^2 = y = 25$

2. Write the following in logarithm form:

(a) $y = 3^4$ $\log_3 y = 4$

(b) $27 = 3^x$ $\log_3 27 = X$

(c) $m = 4^2$ $\log_4 m = 2$

(d) $y = 3^5$ $\log_3 Y = 5$

(e) $32 = x^5$ $\log_X 32 = 5$

(f) $64 = 4^x$ $\log_4 64 = X$ $X = 3$

Condense each expression to a single logarithm.

21) $2\log_6 u - 8\log_6 v$

$\log_6 \frac{u^2}{v^8}$

22) $8\log_5 a + 2\log_5 b$

$\log_5 a^8 b^2$

23) $8\log_3 12 + 2\log_3 5$

$\log_3 \frac{12^8}{5^2} = \log_3 \frac{12^8}{25}$

24) $3\log_4 u - 18\log_4 v$

$\log_4 \frac{u^3}{v^{18}}$

Expand each expression.

$\log_7 a^3 b^4$

$3\log_7 a + 4\log_7 b$

$\log\left(\frac{y}{3}\right)^2 = \log \frac{y^2}{9} = 2\log y - \log 9$

Equations: Solve the following equations

1. $3^n = 70$
2. $6^x = 51$
3. $20^x = 56$
4. $e^{x-1} - 5 = 5$
5. $\ln(3x - 2) = 3$
6. $\log(2x + 5) = 3$