

TOPIC: LOGARITHMS

NAME: _____

DATE: _____

Exercises:

1. Write the following in exponential form:

(a) $\log_3 x = 9$

(d) $\log_4 x = 3$

(b) $\log_2 8 = x$

(e) $\log_2 y = 5$

(c) $\log_3 27 = x$

(f) $\log_5 y = 2$

2. Write the following in logarithm form:

(a) $y = 3^4$

(d) $y = 3^5$

(b) $27 = 3^x$

(e) $32 = x^5$

(c) $m = 4^2$

(f) $64 = 4^x$

3. Solve the following:

(a) $\log_3 x = 4$

(d) $\log_2 \frac{x}{2} = 5$

(b) $\log_m 81 = 4$

(e) $\log_3 y = 5$

(c) $\log_x 1000 = 3$

(f) $\log_2 4x = 5$

PART II : Complete number 1 and try working through number 2. HINT: Condense the left side first then use rules learnt in exponents to solve for x.

1. Use the logarithm laws to simplify the following:

(a) $\log_2 xy - \log_2 x^2$

(b) $\log_2 \frac{8x^2}{y} + \log_2 2xy$

(c) $\log_3 9xy^2 - \log_3 27xy$

(d) $\log_4 (xy)^3 - \log_4 xy$

(e) $\log_3 9x^4 - \log_3 (3x)^2$

2. Find x if:

(a) $2\log_b 4 + \log_b 5 - \log_b 10 = \log_b x$

(b) $\log_b 30 - \log_b 5^2 = \log_b x$

(c) $\log_b 8 + \log_b x^2 = \log_b x$

(d) $\log_b (x+2) - \log_b 4 = \log_b 3x$

(e) $\log_b (x-1) + \log_b 3 = \log_b x$