Key

Pre-Calculus 30
Logarithm Worksheet

1. Evaluate each expression.

a) $\log_8 64$ $= 2$

b) $\log 1000$ $= 3$

c) $\log_2 8$ $= 3$

d) $\log_3 81$ $= 4$

e) $\log_7 1$ $= 0$

f) $\log_4 2$ $= 1/2$

g) $\log 0.01$ $= -2$

h) $\log_4 \sqrt[5]{64}$ $= 3/5$

2. Express in logarithmic form.

a) $3^5 = 243$ $\log_3 243 = 5$

b) $16^{\frac{1}{4}} = 2$ $\log_{16} 2 = 1/4$

c) $2^{-2} = 0.25$ $\log_2 0.25 = -2$

d) $5^{2m} = n + 4$ $\log_5 (n+4) = 2m$ *brackets*

3. Express in exponential form.

a) $\log_4 64 = 3$ $4^3 = 64$

b) $\log_4 8 = \frac{3}{2}$ $4^{3/2} = 8$ OR $\sqrt{4}^3 = 8$

c) $\log 10\,000 = 4$ $10^4 = 10000$

d) $\log_6 (x-2) = y$ $6^y = x-2$

4. Determine the value of x.

a) $\log_4 x = 2$ $4^2 = x$ $x = 16$

b) $\log_5 x = -1$ $5^{-1} = x$ $x = 1/5$

c) $\log_x 81 = 4$ $x^4 = 81$ $x = 3$

d) $\log_4 x = \frac{3}{2}$ $4^{3/2} = x$

$\sqrt{4}^3 = x$

$2^3 = x$

$8 = x$