

Worksheet ---- Exponential / Logarithmic Functions

1. If $f(x) = x^2 + 2x$ and $g(x) = 3x - 1$, find the following:

(a) $f(5)$

(b) $g(-3)$

(c) $f \circ g(0)$

(d) $g \circ f(-2)$

(e) $f \circ g(x)$

(f) $g \circ f(x)$

(g) Are $f(x)$ and $g(x)$ inverse functions? Explain.

2. If $f(x) = \frac{x+2}{x+4}$, find $f^{-1}(x)$.

3. Let $g(x) = 5x - 3$.

(a) Is $g(x)$ a 1-1 function?

(b) Find $g^{-1}(x)$.

(c) Find $g \circ g^{-1}(x)$.

(d) Graph $g(x)$ and $g^{-1}(x)$ on the coordinate system to the right.

(e) What is the line of symmetry for the graphs?

4. Find each of the following (round to the nearest .0001 when appropriate) :

(a) $\log_e 1$

(b) $\log_a a$

(c) $\ln e$

(d) $2.5e$

(e) $-\log\left(\frac{2}{3}\right)$

(f) $\log_{12} 47$

(g) $\log_3 27$

(h) $\log_5\left(\frac{1}{25}\right)$

5. Graph each function using a minimum of 3 ordered pairs.

(a) $f(x) = 2^{x+2}$

x	y

(b) $h(x) = e^x + 1$

x	y

(c) $f(x) = \log_3 x$

x	y

(d) $g(x) = \ln(x + 2)$

x	y

6. The size of the rat population, y , in a given area grows at a rate of 9 % monthly. If the initial rat population was 250, predict the rat population 6 months later and 2 years later (rounded to the nearest whole). Use $y = 250(2.7)^{.09t}$.