

**Kerry Ojakian's MTH 30 Class**  
**Class Assignment #7**

1. For each function, is it invertible or not? (graph and use the horizontal line test)

(a)  $f(x) = 31x + 1$

(b)  $g(x) = x^4 - 8$

(c)  $h(t) = \frac{1}{(t-3)^2}$

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2. Consider the function  $f(x) = 5x - 1$ . And consider its inverse function  $f^{-1}$ .

(a) Before finding the full inverse function, just calculate  $f^{-1}(-1)$  and  $f^{-1}(0)$ .

(b) Check algebraically if  $g(x) = (1/5)x + 1$  is the inverse function.

(c) If  $g$  is NOT the inverse, then find the inverse algebraically.

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3. Consider the function  $f$  given by the following table.

$x$	2	4	6	10	15	17
$f(x)$	3	4	13	2	6	14

Use the table to evaluate each.

(a)  $f(2)$

(b)  $f(10)$

(a)  $f^{-1}(14)$

(b)  $f^{-1}(4)$

(a)  $f^{-1}(2)$

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4. For each pair of functions, check if they are inverses by verifying  $f(g(x)) = x$  and  $g(f(x)) = x$ .

(a)  $f(x) = 2x$ ,  $g(x) = x + 2$

(b)  $f(x) = 7 - x$ ,  $g(x) = 7 - x$

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5. Suppose  $f(x) = 4x - 3$ . Find the inverse  $f^{-1}(x)$  using algebra.

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6. Show that  $f(x) = 4x - 7$  and  $g(x) = \frac{x + 7}{4}$  are inverses.

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7. Show that  $f(x) = \frac{x - 2}{2x + 1}$  and  $g(x) = \frac{-x - 2}{2x - 1} + 5$  are inverses.

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8. Find the inverse of the function  $f(x) = 2x - 1$ .

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9. Find the inverse of the function  $h(x) = x^2 - 4$ , with domain  $(-\infty, 0]$  (so  $x \leq 0$ ).

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10. Find the inverse of the function  $f(x) = \frac{x-1}{x+1}$ .

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