

Spring, 1999
Peterson

MATH 124.

Homework 6.

DUE: Friday, March 5.

P1. Consider the real functions f and g given by $f(x) = x^2 - 3$ and $g(x) = x^2 - 1$.

Compute each of the following. Simplify.

(1) $(f \circ g)(x)$. (2) $(g \circ f)(x)$. (3) $(f \circ f)(x)$.

P2. Find $f^{-1}(x)$ for the real function f in each case:

(1) $f(x) = 4x - 8$. (2) $f(x) = \frac{2-x}{3x-4}$. (3) $f(x) = x^3 - 8$.

P3. Let f and g be the real functions given by $f(x) = \frac{1}{x-3}$ and $g(x) = \frac{3x+1}{x}$.

- (1) Compute $(f \circ g)(x)$.
- (2) Compute $(g \circ f)(x)$.
- (3) What is $f^{-1}(x)$?

P4. Refer to your work on group project 2. Find the point on the curve $y = 4\sqrt{x}$ that is closest to the point $(17,0)$.

P5. Do the following problems from your text on PAGE 137:

- (1) #6.
- (2) #8.

P6. The demand equation for a certain item is $p = 1200 - \frac{4}{5}x$, where p is the price per item and x is the number of items to be sold. In order to produce and sell this product, the company has fixed costs of

\$50 000 and a variable cost of \$320 for each item produced.

- (1) How many items should the company try to produce and sell?
- (2) What is the maximum profit the company can make on this product?
- (3) At what price per item should the company sell this product?