Problems

1) Consider the functions

$$y = f(x) = 2$$

$$y = f(x) = 7 - .5x$$

$$y = f(x) = 2x + x^2$$

$$y = f(x) = 5 + 3x - 2x^2$$

$$y = f(x) = a + bx + cx^2$$

For each function:

a) Evaluate the function at x=-1 , x=0, x=1and x=2.
b) Calculate the first derivative.
c) Find the extreme points (maxima or minima) of the function.

2) Consider the functions $y = f(x,z) = \sqrt{xz}$

$$y = f(x,z) = \sqrt{xz}$$
$$y = f(x,z) = x^{.5}z^{.25}$$

For each function:

a) Evaluate the function at x=1, z=0; at x=1, z=1; at x=1, z=2; at x=2, z=2;
b) Calculate the derivative of the function with respect to x.

General rule:

$$f(x) = a + bx^c \qquad f'(x) = cbx^{c-1}$$

Other rules you may find useful:

$$\sqrt{x} = x^{.5} \qquad \frac{1}{x} = x^{-1} \qquad \frac{1}{x^c} = x^{-c}$$