Calculus I
Exam 1, Summer 2003

You may use graphing calculators. Each problem is worth 20 points. You MUST show your work. Just the correct answer is not sufficient for any points.

1. Find the equation of the line which goes through the point (1,2) and is parallel to the line given by the equation $3x+y=1$.

2. Find the derivatives of the following functions:

a) $f(x)=x^2+1$

b) $f(x)=x+\dfrac{1}{x}$

c) $f(x)=(x+x^{-1})(x^2+1)$;

3. Find the derivatives of the following functions:

a) $f(x)=\dfrac{x}{x^2+1}$

b) $f(x)=\dfrac{1+\tan x}{1-\tan x}$

4. At what points (x,y) does the graph of the function $y=x^2-x^3$ have horizontal tangent line (a line with slope 0)?

5. Let C be the curve given by the equation $y=(2x+1)^3-12x^3$. Find the equation of the tangent line to C at the point (2, 29).