MATH 1510 Tutorial Worksheet 3 Sep 27/Oct 2, 2007

Question 1. Determine the value(s) of k so that the function f is continuous at x = 3:

$$f(x) = \begin{cases} 5k - x & x \le 3\\ k(x+3) & 3 < x < 5\\ kx^2 & x \ge 6 \end{cases}$$

Question 2. Use limits to explain whether the function g is, or is not, continuous at x = 2.

$$g(x) = \begin{cases} 2x^3 - 5 & x \le 2\\ 5x + 1 & x > 2 \end{cases}$$

Question 3. Use the definition of the derivative to find f'(x) if: (a) $f(x) = \sqrt{2x+3}$

(b)
$$f(x) = \frac{-2}{2x+1}$$