Homework 2

Section 9.1: 46, 47.
Section 9.2: 1, 2, 5, 7, 8, 12-16.

1. Suppose $\lim_{x\to 2} f(x)$ exists and $\lim_{x\to 2}[f(x)+(2x+1)] = 5$. Find $\lim_{x\to 2} f(x)$.
2. If $\lim_{x\to c} f(x) = 6$ and $\lim_{x\to c}[f(x) + x^2] = 10$, find the value(s) of c.
3. Determine the values of x, if any, for which the following functions are discontinuous:

   (a) $f(x) = \begin{cases} x^2 - 2 & \text{if } x < 2 \\ 2 & \text{at } x = 2 \\ x + 1 & \text{if } x > 2 \end{cases}$

   (b) $h(x) = \begin{cases} x^2 - x + 1 & \text{if } x \leq 0 \\ 2x^3 + 1 & \text{if } 0 < x < 1 \\ 4 & \text{if } x \geq 1 \end{cases}$