1. Use linear approximation to estimate $\sqrt{50}$.
2. Let $f(x) = x^2$.
(a) Find the best linear approximation $L(x)$ for $f(x)$ near $x = 1$.
(b) Find the interval on which the error in this approximation is less than .25. [Hint: Do the same thing we did with our linear approximation to x^2 at $(3, 9)$].

3. Let $f(x) = x^2 - 2x$. Find the intervals on which f is increasing and the intervals on which it is decreasing.

4. Let $f(x) = 2x - \cos x$. Find the intervals on which f is increasing and the intervals on which it is decreasing.

5. Let $f(x) = e^{x^2-5x}$. Find the intervals on which f is increasing and the intervals on which it is decreasing.