1. Use the Intermediate Value Theorem to show that $f(x) = x^2 - \frac{1}{x} - 3$ has a root in the interval $[1.5, 2]$.
2. Suppose $f(2) = 6$, and $0.4 \leq f'(x) \leq 0.5$ for x in $[2, 2.2]$. Use the MVT to estimate $f(2.2)$.
3. Consider $f(x) = \frac{x}{x^2+1}$. In which intervals does f increase. In which intervals does f decrease. Find the maximum and minimum values of f in $[-10, 10]$.
4. Find the maximum and minimum values of $f(x) = 2x^3 - 3x^2 - 12x + 8$ on each of the following intervals, $[-2.5, 4]$ and then $[-2, 3]$ and then $[-2.25, 3.75]$.
5. Find the Taylor polynomials $T_2(x)$ and $T_3(x)$ for $f(x) = 1 + x + x^2 + x^3 + x^4$ in powers of x.
6. Find the Taylor series for $f(x) = \sin(3x)$ in powers of x.
7. Consider $f(x) = \sqrt{x}$ on the interval $1 \leq x \leq 1 + d$. Find d small enough so that $T_2(x)$ the second-degree Taylor polynomial at $x = 1$, approximates $f(x)$ on $[1, 1 + d]$ with an error at most 0.1 How about with an error .001?
8. Find the number(s) c referred to in the MVT for $f(x) = \sqrt{x}$ over $[0, 4]$.
9. Use the onion method to evaluate $P(3)$ when $P(x) = x^4 + x^3 - 13x^2 - x - 12$.
10. Find the relative and approximate error when w is used to approximate v.
    1. $v = 2.71828182, w = 2.7182$
    2. $v = 98350, w = 98000$
    3. $v = .0000068, w = .000006$
11. Do end of Chapter 1 exercise in section $1.4 : 0, 1, 2, 3$.