

Section 3.1

Solutions and Hints

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for the book:

Precalculus, Mathematics for Calculus 4th Edition
by James Stewart, Lothar Redlin and Saleem Watson.

This section is mostly plugging stuff into a calculator and seeing how the graphs change.

The Intermediate Value Theorem for Polynomials, while not immediately vital, will be important in later Calculus courses: If P is a polynomial function and $P(a)$ and $P(b)$ have opposite signs (e.g. $P(a)$ is positive and $P(b)$ is negative) then there exists at least one value, c , between a and b for which $P(c) = 0$.

The other important fact is that the number of local extrema, or rather the number of “bends,” of a polynomial of degree n is at most equal to $n - 1$. For example x^2 has at most $(2 - 1) = 1$ “bend.” And $x^5 + 3x^2 + 4$ has at most $(5 - 1) = 4$ “bends.” Recall the degree of a polynomial is the biggest exponent it has.

The problems are left for you to work out. There would be little to gain by having them done for you.

Problem 79 would be a good problem to try as it relates stuff back to finding maximums – as you did in chapter 2.