2.5 Curve Sketching Lesson

This document was composed and formatted by Annie Bernatchez.

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Algorithm for Curve Sketching

1. Determine any restrictions in the domain. State any horizontal and vertical asymptotes or holes in the graph.
2. Determine the intercepts of the graph
3. Determine the critical numbers of the function (where is $f'(x) = 0$ or undefined)
4. Determine the possible points of inflection (where is $f''(x) = 0$ or undefined)
5. Create a sign chart that uses the critical numbers, possible points of inflection, and vertical asymptotes as dividing points.
6. Use the sign chart to find intervals of increase/decrease and the intervals of concavity. Use all critical numbers, possible points of inflection, and vertical asymptotes as dividing points.
7. Identify local extrema and points of inflection
8. Sketch the function

Example 1: Use the algorithm for curve sketching to analyze the key features of each of the following functions and to sketch a graph of them.

a) $g(x) = x^3 + 6x^2 + 9x$

b) $f(x) = \frac{1}{(x+1)(x-4)}$

c) $h(x) = x^4 - 5x^3 + x^2 + 21x - 18$

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