

Math 199, Fall 2023
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Preparation assignment 4 - A strategy for sketching curves

Estimated time: 15-30 minutes.

Point value: 2 points.

Goals: Organize your thoughts on how to collect information from a function to construct an accurate sketch of the graph. Understand the roles of each derivative.

Take out a separate sheet of paper.

1) Describe what features the graph of $f(x)$ has when

(a) $f(x) = 0$;

(b) $f'(x) = 0$;

(c) $f''(x) = 0$.

2) Describe what features the graph of $f(x)$ has when

(a) $f(x) < 0$, $f(x) > 0$;

(b) $f'(x) < 0$, $f'(x) > 0$;

(c) $f''(x) < 0$, $f''(x) > 0$.

3) What features can the graph have when $f'(x)$ or $f''(x)$ doesn't exist?

4) Suppose you are given a (specific) function $f(x)$. Outline a step-by-step plan for how you would go about sketching the graph (accurately).