

Summary of Curve Sketching

- 1 Domain of $f(x)$
- 2 x and y intercepts
 - 1 x -intercepts occur when $f(x) = 0$
 - 2 y -intercept occurs when $x = 0$
- 3 Find the asymptotes (vertical, horizontal / slant). Graph them.
- 4 Find $f'(x)$
 - 1 Find the critical values, all x -values where $f'(x) = 0$ or when $f'(x)$ does not exist. **These are potential local extrema.**
 - 2 Find increasing / decreasing intervals using numberline
 - 3 Find local maximums / minimums (if any exist). Remember to write them as points.
 - 1 Local Max at $x = c$: $f'(x)$ changes from (+) to (-) at $x = c$.
 - 2 Local Min at $x = c$: $f'(x)$ changes from (-) to (+) at $x = c$.

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- 5 Plot them
- 6 Find $f''(x)$
 - 1 Find all x -values where $f''(x) = 0$ or when $f''(x)$ does not exist. **These are potential inflection points.**
 - 2 Find intervals of concavity using the number line
 - 3 Find points of inflection
 - 1 Must be a place where concavity changes
 - 2 The point must exist (i.e, can't be an asymptote, discontinuity)
 - 4 Plot them
- 7 Sketch

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