General Strategy for Curve Sketching

1. (Precalc skill) Plot

   a discontinuities of f (especially infinite ones)

   b endpoints (or $x \to \pm\infty$)

   c easy points (optional)

2. Find the critical points — usually where the slope changes from positive to negative, or vice versa.

   a Solve $f'(x) = 0$

   b Plot critical points and values, but only if it's relatively easy to do so.

3. Decide whether $f'(x) < 0$ or $f'(x) > 0$ on each interval between critical points and discontinuities. (This just double checks steps 1 and 2.)

4. Decide whether $f''(x) < 0$ or $f''(x) > 0$ on each interval between critical points and discontinuities. This tells us whether the graph is concave up or concave down. Inflection points occur when $f''(x_0) = 0$. (If you can, skip this step.)

5. Combine this information to draw the graph.

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