4.5 Summary of Curve Sketching

The following checklist is intended as a guide to sketch a curve $y = f(x)$ by hand. Not every item in the list is relevant for every function.

Guidelines for sketching a curve
A. Domain
B. Intercepts
   - x- and y-intercepts
C. Symmetry
   - Even: $f(x) = f(-x)$ for all x in the domain
   - Odd: $- f(x) = f(-x)$ for all x in the domain
   - Neither
   - Periodic
D. Asymptotes
   - Horizontal
   - Vertical
   - Oblique (slant)
E. Intervals of Increasing or Decreasing
   - If $f'(x) > 0$ then the function is increasing
   - If $f'(x) < 0$ then the function is decreasing
F. Local Maximum and Minimum Values
   - Find critical values (values where $f'(c) = 0$ or $f'(x)$ does not exist)
   - Determine if the critical values are local max or local min
G. Concavity
   - Compute $f''(x)$
   - If $f''(x) > 0$ then concave up
   - If $f''(x) < 0$ then concave down
   - Locate points of inflection, if they exist
H. Sketch the curve.

Using this checklist we will practice problems in class.