

Curve Sketching

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When sketching the graph of a function, you should consider the following information:

- The domain and range of the function,
- its x and y intercepts,
- its vertical and horizontal asymptotes (or limit at infinity in general),
- intervals where the function is increasing or decreasing,
- intervals where the function is concave up or down,
- and its relative and absolute extrema.

For each of the functions below, determine the information listed above and then sketch a graph of the function.

I. $f(x) = \frac{2(x^2 - 9)}{x^2 - 4}$

II. $f(x) = \frac{2x + 3}{x^2 - 1}$

III. $f(x) = 2x^{5/3} - 5x^{4/3}$

IV. $f(x) = \frac{1}{1 + e^{-x}}$

V. $f(x) = x^4 - 12x^3 + 48x^2 - 64x$