

October 28

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When graphing functions, there is some basic analysis that will help you do it.

- Identify the domain or the interval in question
- identify if there is any helpful symmetry (e.g. even/odd function)
- Find critical points & inflection points
- Find the extreme values of the function
- Identify any asymptotes, or the end behavior as $x \rightarrow \infty$ or $-\infty$.
- Find the x and y intercepts

1. Graph the following functions

(a) $f(x) = x^3 - 6x^2 + 9x$

(b) $g(x) = \frac{4x+4}{x^2+3}$

(c) $h(x) = 2 - x^{2/3} + x^{4/3}$

(d) $s(x) = e^{-x^2}$

2. Find a possible graph for $f(x)$ based on its derivative:

$$f'(x) = (x - 1)(x + 2)(x + 4)$$

3. Sketch a graph of $f(x) = x^3 - 3x^2 - 144x - 140$. What property makes it “easy” to graph?