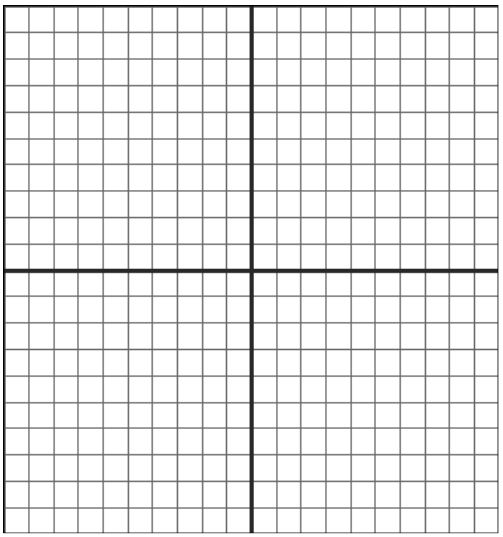
Calculus 120, section 2.4 Sketching a Curve, Part 2

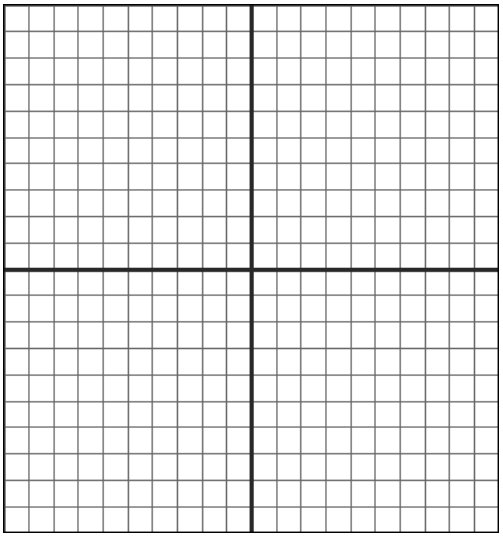
notes by Tim Pilachowski

We now add intercepts and asymptotes to our consideration of graphing functions.

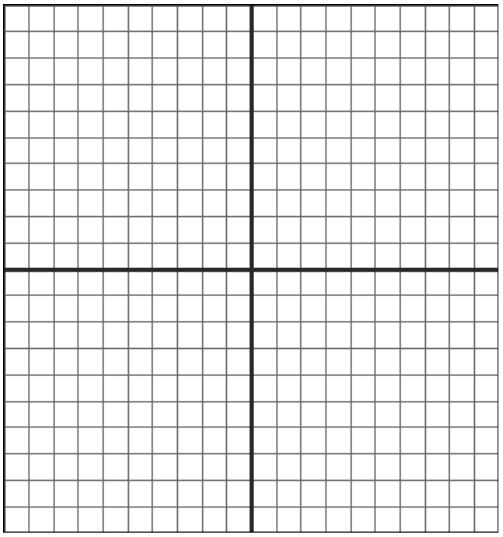
Example A: Sketch the graph of $f(x) = x^2 + 5x - 6$.



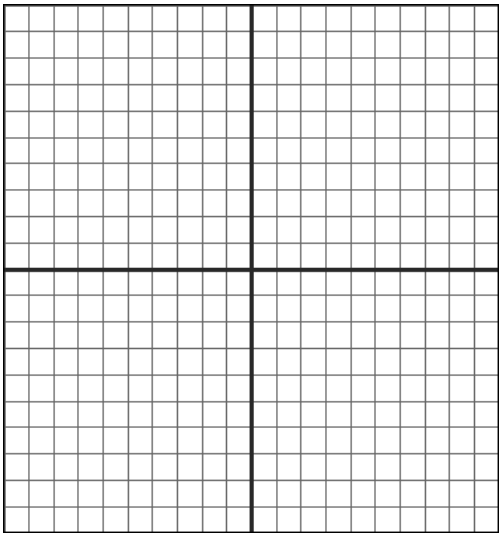
Example B: Sketch the graph of $f(x) = (1 - 2x)^3$.



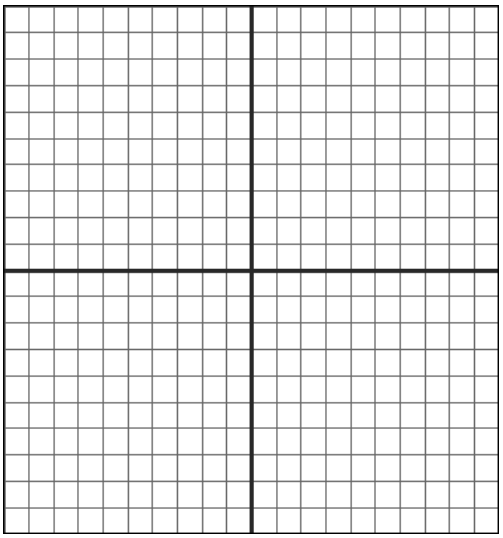
Example C: Sketch the graph of $y = x^4$.



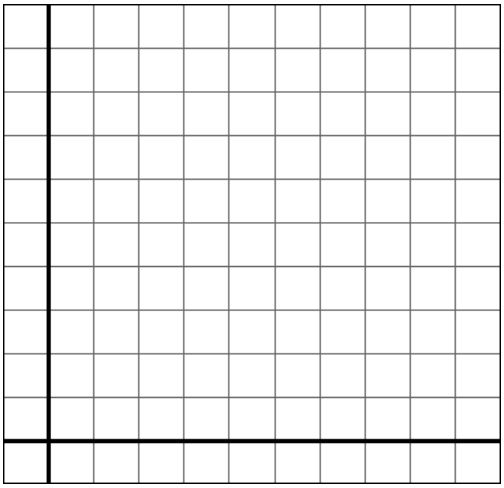
Example D: Sketch the graph of $f(x) = x^3 - x^2 - x$.



Example E: Sketch the graph of $y = \frac{1}{x} = x^{-1}$.



Example F: Sketch the graph of $f(x) = 2x + \frac{2}{x} - 1 = 2x + 2x^{-1} - 1$ for $x > 0$.



Finding asymptotes:

1) vertical asymptotes: Until chapter 4, vertical asymptotes will come from looking at denominators. Any x-value that would create a denominator of 0 will show up on the graph as a vertical asymptote.

2) horizontal asymptotes: Look at what happens as x approaches ∞. If $\lim_{x \to \infty} f(x) =$ a number a, then the horizontal asymptote has equation $y = a$.

For the current Math 120 syllabus, you will not need to find slant asymptotes.