

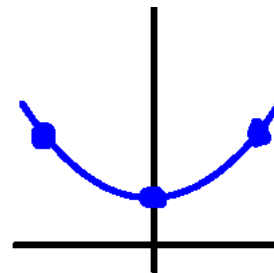
Midterm B1

Section 4

November 7, 2014

Consider the set of points $(-2, 2)$, $(1, 1)$ and $(2, 2)$ and the interpolating polynomial $f(x)$, which is a 2nd degree polynomial that passes through those points.

Problem 1 [5pt]: Write down $f(x)$ as a Lagrangian polynomial.



Before anything, I do a quick *qualitative* sketch to see what's going on.

Since we're told that f is a 2nd degree polynomial, we know that f is either a parabola, a line, or a point. It's clear from my sketch that it has to be a parabola opening upwards. If that's the case, then for $f(x) = \alpha x^2 + \beta x + \gamma$, we must have α strictly greater than 0. It turns out that this quick analysis will not help us to much for *this* problem, but it never hurts to start with an idea of what's going on. That way, if I end up with something like $\alpha = -2$ in the end, I'll know that I messed up somewhere.