Problem 1: Spline evaluation

1. The four control points \( p_0 = (-1, 0), p_1 = (0, -1), p_2 = (1, 0), \) and \( p_3 = (0, 1) \) can be used to define one segment of (a) Bézier spline, (b) Catmull-Rom spline, or (c) B-spline. For each type of spline, plot the spline curve and the \( x \) and \( y \) coordinate functions for the spline segment defined by these control points.

2. Find the minimal axis-aligned bounding boxes of the three curves.

3.* Find the control points that would be required to make the Catmull-Rom spline and the B-spline produce the same curve that the Bézier spline produces for the points \( p_0, \ldots, p_3 \)