

CS 4620 Homework 7

due: Friday 5 December 2006 (late OK to 8 December)

Problem 1: Spline evaluation

1. The four control points $\mathbf{p}_0 = (-1, 0)$, $\mathbf{p}_1 = (0, -1)$, $\mathbf{p}_2 = (1, 0)$, and $\mathbf{p}_3 = (0, 1)$ 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 $\mathbf{p}_0, \dots, \mathbf{p}_3$