

## Homework # 11, due Fri, May 6th.

1. Give formulas (in terms of the usual power functions) for the polynomial pieces corresponding to the B-spline of order 4

$$B(\cdot|0, 0, 1, 3, 6).$$

2. Create a MATLAB program that determines whether the Schoenberg-Whitney conditions are met, given  $k$ , knot sequence  $t$  of length  $n + k$  and a sequence of data sites  $\tau$  of length  $n$ . Your program should order the sequences first. Run it on 2–3 examples of your choice.

3. Create a MATLAB program to generate and plot a Bézier curve. Construct the program so that it accepts control points as  $N \times 2$  matrices whose first (second) column lists  $x$ – ( $y$ –) coordinates of the control points. Run it on control points

$$\begin{bmatrix} 7 & 0 \\ 4 & -3 \\ 2 & -1 \\ 0 & 0 \end{bmatrix}, \quad \begin{bmatrix} 3 & 0 \\ 4 & -1 \\ 5 & -2 \\ 6 & 1 \\ 1 & 11 \end{bmatrix}.$$