Introduction to Numerical Analysis

MAT 442 – SPRING 2010

Homework # 10

1. Determine whether this function is a first-degree spline:

$$S(x) = \begin{cases} x & -1 \le x \le 0.5 \\ 0.5 + 2(x - 0.5) & 0.5 \le x \le 2 \\ x + 1.5 & 2 \le x \le 4 \end{cases}$$

2. Determine whether this function is a first-degree spline:

$$S(x) = \begin{cases} x^3 + 1 & -3 \le x \le 0 \\ -x + 1 & 0 < x < 2 \\ -x^2 + 10x - 15 & 2 \le x \le 6 \end{cases}$$

3. Determine whether this function is a first-degree spline:

$$S(x) = \begin{cases} x & 0 < x < 1 \\ 2 - x & 1 < x \le 2 \end{cases}$$

4. Determine the first-degree spline $S(x)$ that interpolates these data:

x	-1	0	$\frac{1}{2}$	1	2	$\frac{5}{2}$
y	2	1	0	1	2	3