

April 28, 2004

MATH 225 N2
HOMEWORK 9

- 6.2 2, 8, 12, 15, 20, 26, 28.
- 6.3 2, 5, 8, 12, 17, 21 a, d, 22 a, e.
- 6.5 1, 4, 5, 9, 13, 17a, e, 18a, b, 19, 25.
- *Reference : Linear algebra with applications by Steven J. Leon* Hooke's law states that the force F applied to a spring is proportional to the distance the spring is stretched ie if the distance is x then $F=kx$. The proportionality constant k is called the spring constant. Some physics students want to determine the spring constant for a given spring. They apply forces 3, 5 and 8 pounds, which have the effect of stretching the spring 4, 7 and 11 inches, respectively. Using Hooke's law they derive the following system of equations:

$$4k = 3$$

$$7k = 5$$

$$11k = 8$$

The system is clearly inconsistent. Use least squares method to compute k .