Week #6 Homework: hint for Problem #2.

For problem #2 on HW#6, the following result will be useful:

> If x, y, and z are *distinct* real numbers, then the matrix
>
> $$M = \begin{bmatrix} 1 & 1 & 1 \\ x & y & z \\ x^2 & y^2 & z^2 \end{bmatrix}$$
>
> is invertible.

This can be seen by computing the determinant of M

$$\det(M) = (x - y)(y - z)(z - x).$$

The determinant is non-zero if and only if the values of x, y, and z are distinct.

The implication of this is that the system of equations $M\mathbf{x} = \mathbf{b}$ has a unique solution for any vector $\mathbf{b} \in \mathbb{R}^3$.