

Homework 6 MATH 304 Section 3

Assigned: Wednesday, September 17.

Potentially Collected: Wednesday, September 24.

1. Calculate S^k for $k = 2, 3, 4, 5$, and 6.

$$S = \begin{bmatrix} 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

2. Verify that $AB = AC$ and yet $B \neq C$. Note that matrix multiplication is different than number multiplication in more ways than non-commutativity.

$$A = \begin{bmatrix} 1 & 2 \\ 3 & 6 \end{bmatrix} \quad B = \begin{bmatrix} 3 & -8 \\ 2 & 3 \end{bmatrix} \quad C = \begin{bmatrix} 5 & 2 \\ 1 & -2 \end{bmatrix}$$