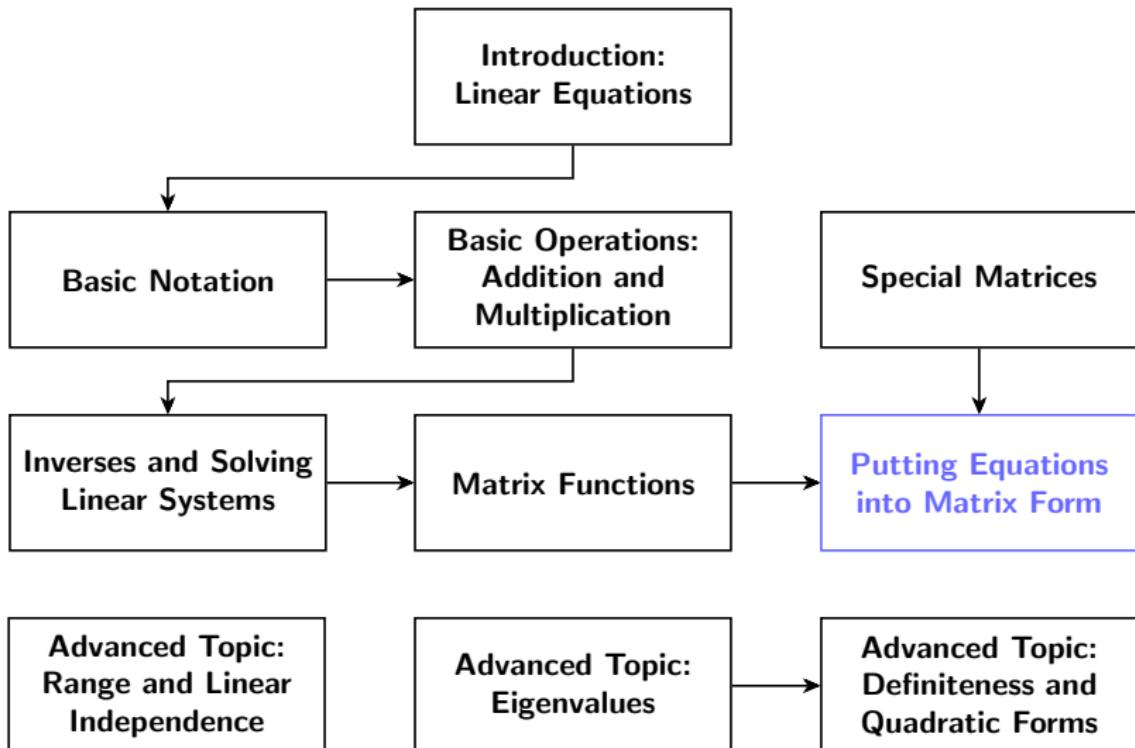


# Linear Algebra Review



- Given  $a_i \in \mathbb{R}^n$ ,  $b_i \in \mathbb{R}$  for  $i = 1, \dots, m$ ,  
 $f : \mathbb{R}^n \rightarrow \mathbb{R}$

$$f(x) = \sum_{i=1}^m (a_i^T x - b_i)^2$$

$$\bullet \hspace{0.2cm} f: \mathbb{R}^{m \times n} \rightarrow \mathbb{R}$$

$$f(A) = \sum_{i=1}^m \sum_{j=1}^n A_{ij}^2$$

- Given  $x \in \mathbb{R}^m$ ,  $y \in \mathbb{R}^n$ , construct  $A \in \mathbb{R}^{m \times n}$  such that

$$A_{ij} = (x_i - y_j)^2$$