

7.2 Matrices

Precalc

- ~ Matrix: An arrangement of quantities in an array of rows and columns
- ~ Element: a quantity in a matrix
- ~ Order: The dimensions of a matrix, written in two forms:
 - ~ rows x columns
 - ~ a_{ij} , where i =rows and j =columns

- ~ Square matrix: A matrix with the same number of rows and columns
- ~ Equal matrices have the same order and their corresponding elements are equal.
- ~ Scalar: A quantity multiplied to every element in a matrix.

- ~ A zero matrix consists of all zeros; it is the additive identity
- ~ The multiplicative identity matrix has a diagonal of 1's from the upper left to the lower right. The rest of the elements are zeros.

Inverse Matrices

- ~ Inverse written A^{-1}
- ~ If A has an inverse, it is called nonsingular
- ~ If A has no inverse, it is called singular.
- ~ To find whether a matrix has an inverse, you calculate the determinant $ad-bc$.

Theorem

- ~ A $n \times n$ matrix has an inverse iff the determinant does not equal zero