Math Camp   2021 Summer
Chunyu Qu

Homework 10

For what numbers b is the following matrix positive definite? Positive semidefinite?

$$\begin{pmatrix} 2 & -1 & b \\ -1 & 2 & -1 \\ b & -1 & 2 \end{pmatrix}$$

Redo the in-class example of LDL^T decomposition

$$\begin{pmatrix} 4 & 12 & -16 \\ 12 & 37 & -43 \\ -16 & -43 & 98 \end{pmatrix}$$

Redo the in-class example of Cholesky decomposition

$$\begin{pmatrix} 4 & 12 & -16 \\ 12 & 37 & -43 \\ -16 & -43 & 98 \end{pmatrix}$$

Redo the adjusted in-class example of Lagrange Multiplier
Find the extremum of $f(x, y) = x^2 + 3xy + y^2 - x + 3x$
Given $g(x, y) = x + y - 1 = 0$