Review of LS:

Consider the problem $\min \|y - Hw\|^2$

The ~~solution for~~ set of solutions for this problem is obtained from the normal equations

$$H^* H w = H^* y$$

(M×M sys. of equation

Soln. is unique if

$H^* H$ is invertible

$\Leftrightarrow$ H is full column rank

$\Leftrightarrow$ columns of H are indep.

$\Leftrightarrow$ $H^* H$ is positive definite.

If $N = 5$ & $M = 3$, is the soln. unique?

If $N = 5$ & $M = 8$, is the soln. unique?

Prove that $H^* H$ is positive semi definite.