4) a) J clockwise rotation

F: Reflects accross the 6/2 line, measuring clockwise from the positive by-axis

b) Note - lots of credit to several online sets of notes on QR w/

We need c, s such that

$$\begin{bmatrix} C & -5 \\ S & C \end{bmatrix} \begin{bmatrix} C & Q \\ C & D \end{bmatrix} = \begin{bmatrix} C & Q \\ C & D \end{bmatrix}$$

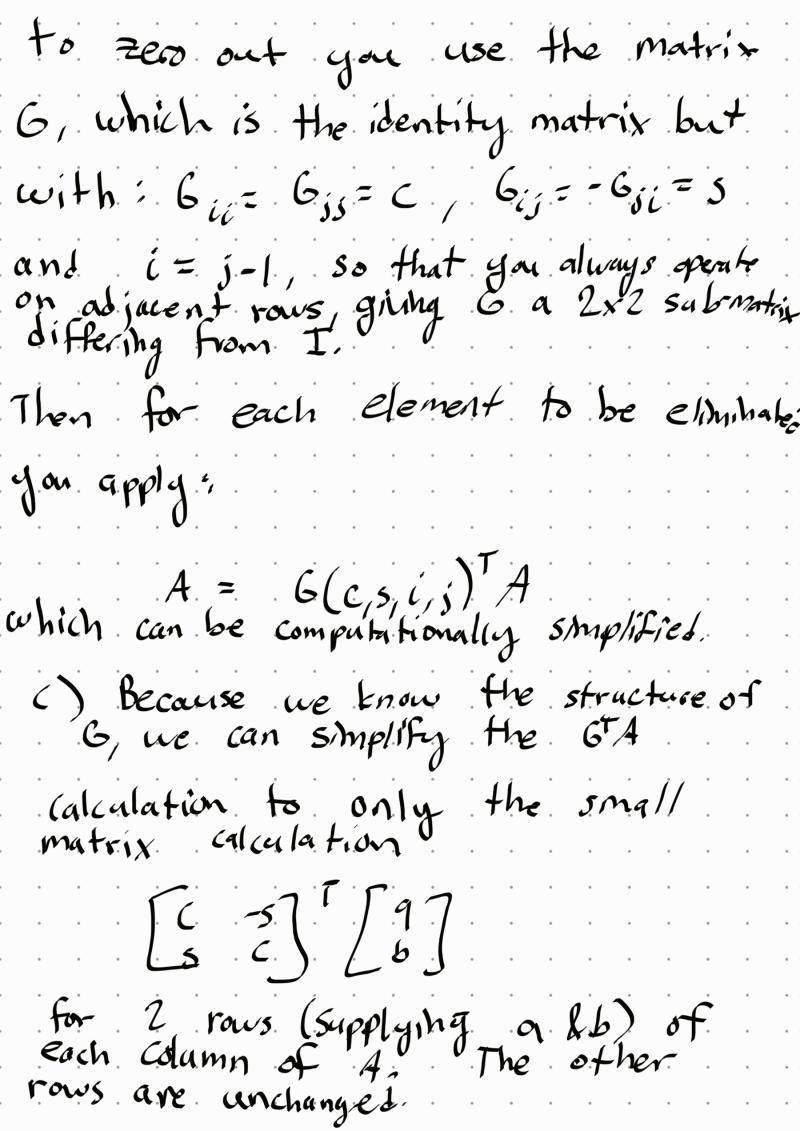
With 1= Ja2+62

Then

$$c = \frac{a}{\sqrt{a^2 + B^2}}$$

$$S = \frac{b}{\sqrt{a + 2 + b^2}}$$

Then for each i,j you want



This calculation has 4 multiplications and 2 additions per element, girlding

Of flops where f is the length of the raw vector.

This is in comparison to 4 f via Householder Transformations.