Section 3.1

Would like to be able to look at a metrix and determine if it is investible or not without having to go all the way through row ceduction

Note: Calculating squerse via nou reduction becomes very "expensive" in terms of computation run fine. Especially as multix becomes large.

We would like to figure out some quantity that will be O if midnx not invertible, nonzero of Kerwise. This will be exactly the determinent.

The floory behind the existence of the determinant is somewhat complicated, will not go through it all here. For now, just trast the fact that for every square metrick we can calculate the determinant, which will be zero if metrix invertible, nonzero otherwise. And the determinant is unique.

Calculating:

The simplest case is a ZxZ matrix. Method for larger metrices builds from here.

$$def A = (1)(4) - (-2)(3)$$
= 10

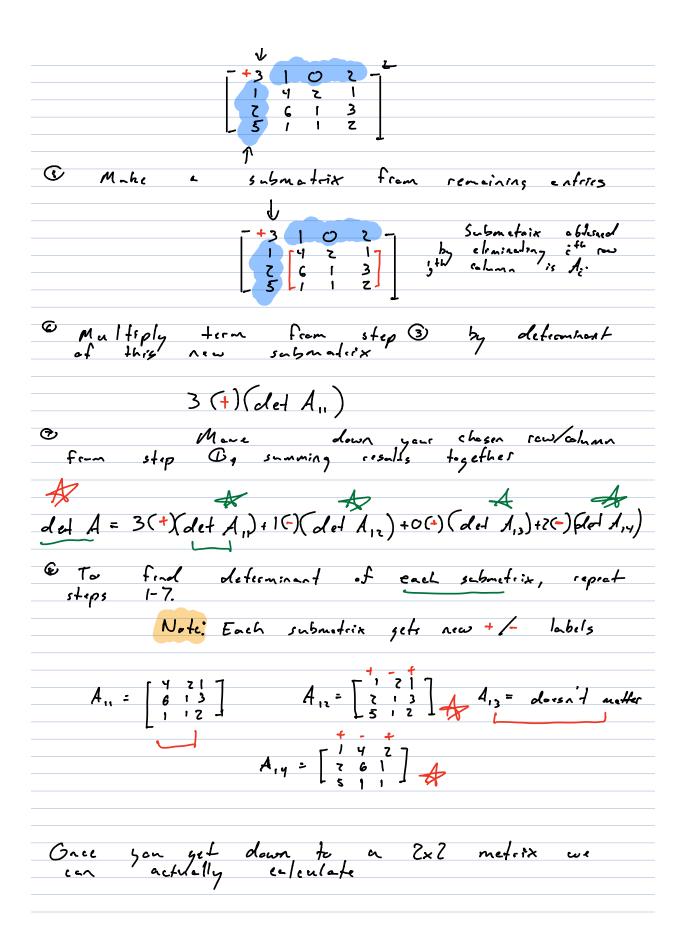
Steps for Axa metrix:

6 "Label" entries of A with alternating +/starting with + in top left corner

1 Pich a row/column

Take first entry in column/row along with 3(+)

Temporarily eliminate/ignore the row and column holding three entry



$$det A_{11} = 4(2-3) - 7(12-3) + 1(6-1)$$

$$= -4 - 18 + 5 = -17$$

$$det A_{12} = 1(2-3) - 7(4-15) + 1(2.5)$$

$$= -1 + 22 - 3 = 18$$

$$det A_{13} = doesn't mether$$

$$det A_{14} = 1(6-1) - 4(2-5) + 2(2-36)$$

$$= 6 + 12 - 56 = -38$$

50:

Theorem: If A is a trianguler metrix then det A is spent of the entries on the main diagonal.