MA511 HW24 Sol.

#4.3.2

$$\det A = (-1)C_{12} = (-1)\det\begin{bmatrix} 1 & 1 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix} = 1$$

$$\det B = \det\begin{bmatrix} 0 & 3 & 5 \\ 6 & 7 & 9 \\ 0 & 0 & 1 \end{bmatrix} - 2\cdot(0) = -18$$

#4.3.4.

(a) $$A = \begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & 2 & 2 & 2 \\ 1 & 2 & 3 & 3 \\ 1 & 2 & 3 & 4 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 1 & 1 & 0 & 0 \\ 1 & 1 & 1 & 0 \\ 1 & 1 & 1 & 1 \end{bmatrix}\begin{bmatrix} 1 & 1 & 1 & 1 \\ 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

all pivots are 1's, $\det A = 1$

(b) $$\det\begin{bmatrix} 2 & 2 & 2 & 2 \\ 2 & 6 & 6 & 6 \\ 2 & 6 & 8 & 8 \\ 2 & 6 & 8 & 10 \end{bmatrix} = 32$$

$\det$ = product of these 4 pivots

$= 2(4)(2)(2)$

$= 32$