

# M 340 L - Quiz 4

06-23-08

## 1 Exercise 3.2, # 7 (solution)

We are instructed to find the determinant using the row echelon form reduction (and no other method).

$$A := \begin{pmatrix} 1 & 3 & 0 & 2 \\ -2 & -5 & 7 & 4 \\ 3 & 5 & 2 & 1 \\ 1 & -1 & 2 & -3 \end{pmatrix} \begin{array}{l} \longrightarrow \\ R_2+2R_1 \\ R_3-3R_1 \\ R_4-R_1 \end{array} \begin{pmatrix} 1 & 3 & 0 & 2 \\ 0 & 1 & 7 & 8 \\ 0 & -4 & 2 & -5 \\ 0 & -4 & 2 & -5 \end{pmatrix}$$
$$\begin{array}{l} \longrightarrow \\ R_3+4R_2 \\ R_4-R_3 \end{array} \begin{pmatrix} 1 & 3 & 0 & 2 \\ 0 & 1 & 7 & 8 \\ 0 & 0 & 30 & 27 \\ 0 & 0 & 0 & 0 \end{pmatrix}$$

We now have a matrix that is a reduced echelon form of the original. Since we didn't substitute any row by a multiple of itself and we didn't interchange rows, we can compute the determinant simply by multiplying the elements in the diagonal:

$$\det(A) = 1 \times 1 \times 30 \times 0 = 0$$