

# Homework 6 (7/9) solutions

5.1)

1. see P 534

One can use det or determinant at wolframalpha.com to compute the determinant of a matrix.

8.a see P 534

9.  $\det A = 1$        $\det B = 2$       ,  $\det C = 0$

11, 14, 15      See P 534.

29. The rule 9 on P 248 holds when A and B are square matrices. If A is not square,  $\det A$  has no definition.

5.2)

1.  $A = \begin{pmatrix} 1 & 2 & 3 \\ 3 & 1 & 2 \\ 3 & 2 & 1 \end{pmatrix} \rightarrow \begin{pmatrix} 1 & 2 & 3 \\ 0 & -5 & -7 \\ 0 & -4 & -8 \end{pmatrix}$

$\det A = (-5) \times (-8) - (-4) \times (-7) = 12$

The rows of A are <sup>linearly</sup> independent.

$B = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 4 & 4 \\ 5 & 6 & 7 \end{pmatrix} \rightarrow \begin{pmatrix} 1 & 2 & 3 \\ 0 & -4 & -8 \\ 0 & -4 & -8 \end{pmatrix} \rightarrow \begin{pmatrix} 1 & 2 & 3 \\ 0 & -4 & -8 \\ 0 & 0 & 0 \end{pmatrix}$

$\det B = 0$ . The rows of A are linearly dependent.

$C = \begin{pmatrix} 1 & 1 & 1 \\ 1 & 1 & 0 \\ 1 & 0 & 0 \end{pmatrix}$

By the big ~~formula~~ formula,  $\det C = -1$

The rows of A are linearly independent.

2 see P 534.