For Monday Sep 29th please:

- Review determinants of 3 by 3 matrices;

- Read Section 4.1;

- Understand definitions of the following terms: n-th order linear DE, homogeneous, non-homogeneous, associated homogeneous equation, linear combination, linearly (in)dependent set of functions, general/particular solution, superposition;

- For now, do not worry about BVPs and Wronskian, we will discuss those on Monday.

- Do the exercises below.

Exercise 1. Compute determinants of the following matrices:

$$A = \begin{pmatrix} 1 & 2 \\ 5 & 6 \end{pmatrix}, \quad B = \begin{pmatrix} 1 & 2 & 7 \\ 3 & 5 & 8 \\ 1 & 4 & 7 \end{pmatrix}, \quad C = \begin{pmatrix} 1 & 1 & 1 \\ 2 & 2 & 0 \\ 3 & 3 & 7 \end{pmatrix}. \tag{1}$$

Exercise 2. Use the determinant to answer the question whether the following three vectors are linearly independent: $v_1 = \langle 1, 2, 0 \rangle$, $v_2 = \langle 3, 0, 1 \rangle$, $v_3 = \langle 5, 4, 1 \rangle$.

Exercise 3. For the following DE find all values of λ such that $e^{\lambda x}$ solves the DE:

1) $y'' - y = 0$;

2) $y'' + 5y' + 6y = 0$;

3) $5y'' + 4y + 10y = 0$ (*Hint: follow the steps and don't be wrong.*).