DIFFERENTIAL EQUATIONS (751873001, 113-1) - HOMEWORK 5

Return by December 12, 2024 (Thursday) 23:59

Total marks: 50

Special requirement. All homework must be prepared by using LaTeX.

Exercise 1 (10 points)**.** Solve Exercise 3.3.4.

Exercise 2 (10 points)**.** Solve Exercise 3.4.7.

Exercise 3 (10 points)**.** Solve Example 3.4.6 using Theorem 3.4.8.

Exercise 4 (10 points)**.** Given any $b, c \in \mathbb{R}$, find general solutions for the equation $u'' + bu' + cu = 0$.

Exercise 5 (10 points)**.** Fix $\alpha, \beta \in \mathbb{R}$. Find general solutions for the Euler equation

$$t^2 u''(t) + \alpha t u'(t) + \beta u(t) = 0, \quad \text{for all } t > 0.$$