

Math 557, Homework 2 (a)

1. The differential equation

$$xy'' + (1 - x)y' + \lambda y = 0, \lambda \text{ constant} \quad (1)$$

is known as the Laguerre differential equation. Determine the type of equation and find solutions. Second, show that if $\lambda = n$ (integer) then the solution is simply a polynomial.

2. Find two solutions for

$$2(\sin x)y'' + (1 - x)y' - 2y = 0 \quad (2)$$

3. Problems from book, 3.3, 3.4, 3.14, 3.18, 3.24 a, c, h, 3.26