Problem 1. (2 points.) Give operators that annihilate the following functions:

(a): \(e^{7x} + \frac{x}{2} + 5\)

(b): \(x^2 + e^x \sin x + 2xe^x \cos x\)

Problem 2. (3 points.) Use method of undetermined coefficients to solve \(y'' + y = x\). (give all steps).

Problem 3. (3 points.) The solution of the associated homogeneous differential equation to \(y'' - y = 1/x\) is \(y_c = C_1e^x + C_2e^{-x}\). Use this solution to determine \(y_p\).