MTHE 235, Homework #6

Part I
Please do the following problems from the Textbook.
Section 3.5: Problem 47, 57
Section 3.6: Problem 2, 25
Section 3.7: Problem 17, 18

Part II

1. Find the general solution using variation of parameters, where \( g(t) \) is a given continuous function.
\[
x'' + 4x = g(t).
\]

2. Verify that the given functions \( x_1, x_2 \) satisfy the corresponding homogeneous equation; then find the general solution of the given non-homogeneous equation.
\[
x'' - \frac{t + 2}{t}x' + \frac{t + 2}{t^2}x = 2t, \quad t > 0
\]
\[
x_1(t) = t
\]
\[
x_2(t) = te^t
\]