Q1. Given \( y'' + y = \cos x \) and the solution of the associated homogeneous part is \( y = A \cos x + B \sin x \). Use method of variation of parameters to give particular solution.

Q2. The solution of the associated homogeneous part of \( y'' + y = 1 + x + x^2 \) is given by \( y = A \cos x + B \sin x \). Use method of undetermined coefficients to guess the particular solution of the differential equation.

Q3. Given \( y'' + y = x \cos x \) and the solution of the associated homogeneous part is \( y = A \cos x + B \sin x \). Use method of variation of parameters to give particular solution. Use method of undetermined coefficients to guess the correct particular solution.