Example. Consider the nonhomogeneous ODE

\[ t^2 y'' - 2y = 3t^2 - 1, \quad t > 0 \]

Show that \( y_1(t) = t^2 \) and \( y_2(t) = t^{-1} \) are homogeneous solutions, and then find the general solution of the nonhomogeneous ODE using variation of parameters.
Continued.
Continued.