1. Solve: $(D^2 - DD' - 2D'^2 + 2D + 2D')z = \boldsymbol{e^{2x+3y}} + \sin(2x + y) + xy$.

   Ans: $\boldsymbol{z = f_1(x - y) + e^y f_2(2x + y) - \frac{1}{10}e^{2x+3y} - \frac{1}{6}cos(2x + y) + \frac{x}{24}(6xy - 6y + 9x - 2x^2 - 12)}$

2. Solve: $(D^2 - D'^2 + D - D')z = \boldsymbol{e^{2x+3y}}$

   Ans: $\boldsymbol{z = f_1(y + x) + e^{-x} f_2(y - x) - \frac{1}{6}e^{2x+3y}}$

3. Solve: $(D - D' - 1)(D - D' - 2)z = \sin(2x + 3y)$

   Ans: $\boldsymbol{z = e^x f_1(y + x) + e^{2x} f_2(y + x) + \frac{1}{10}[sin(2x + 3y) - 3cos(2x + 3y)]}$

4. Solve: $(DD' + D - D' - 1)z = \boldsymbol{xy}$

   Ans: : $\boldsymbol{z = f_1(y) + e^{-x} f_2(y + x) + x}$