Assignment

I. Solve the following PDEs:

1. $\left(D_x^4 + D_y^4 - 2D_x^2 D_y^2\right) z = 0$
2. $\left(2D_x^2 + 5D_x D_y + 2D_y^2\right) z = 0$
3. $\left(D_x^3 - 3D_x^2 D_y + 2D_x D_y^2\right) z = 0$
4. $\left(D_x^2 + 5D_x D_y + 6D_y^2\right) z = e^{x-y}$

Answers:

1. $z = xf_1(x-y) + f_2(x-y) + xf_3(x+y) + f_4(x+y)$
2. $z = f_1(y-2x) + f_2\left(y - \frac{1}{2}x\right)$
3. $z = f_1(y) + f_2(y+x) + f_3(y+2x)$
4. $z = f_1(y-2x) + f_2(y-3x) + \frac{1}{2}e^{x-y}$