

# Mathematical Methods II

## Weekly problem set 8

- (1) Find the general solution of the 2D Laplace equation

$$\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 0.$$

- (2) Find the most general solution of the equation

$$ck \frac{\partial^2 u}{\partial x^2} + (c^2 + k^2) \frac{\partial^2 u}{\partial x \partial y} + ck \frac{\partial^2 u}{\partial y^2} = 6ck(2x^2 + y)$$

given that  $u(x, y) = 2 + (c/k)^2([c/k] - 1)$  where the line  $x = 1$  intersects the line  $y = c/k$ .