12.1.1.

$$\frac{\partial u}{\partial x} = \frac{\partial u}{\partial y}$$

Ansätt : $u(x,y) = X(x)\,Y(y)$.

$X\,'(x)\,Y(y) = X(x)\,Y\,'(y)$

Dividera med $X(x)\,Y(y)$.

$$\frac{X\,'(x)}{X(x)} = \frac{Y\,'(y)}{Y(y)} = \text{konstant} = \lambda \ .$$

$$X''(x) - \lambda X(x) = 0$$

$$Y''(y) - \lambda Y(y) = 0$$

$$X(x) = Ae^{\lambda x}$$

$$Y(y) = Be^{\lambda y}$$

$$u(x,y) = Ae^{\lambda x}Be^{\lambda y} = Ce^{\lambda(x+y)}$$