

10.2b

You are given the following functional relation

$p = u(x, y) = (x - a)^2 + (y - b)^2$ , note that setting this to  $p$  is relatively useless in this case so just do the obvious.

$$\frac{\partial u}{\partial x} = 2(x - a) \text{ and } \frac{\partial^2 u}{\partial x^2} = 2, \quad \frac{\partial u}{\partial y} = 2(y - b), \quad \frac{\partial^2 u}{\partial y^2} = 2$$

$$\text{Therefore } \frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 4$$