W2-6-4 Temperature distribution 4

The temperature, T in degrees Celsius on a point (x, y) with x and y in metres on a flat metal plate is provided by $T(x, y) = \frac{60}{(1+x^2+y^2)}$. Find the change in temperature as a function of the distance in the point $(2, 1)$ in the y-direction.

In the y-direction it holds that $\left(\frac{\partial T}{\partial y}\right)_x = \frac{-120y}{(1+x^2+y^2)^2}$. In the point $(2, 1)$ this is equal to $-\frac{10}{3} = 3.33\ °C$ C per meter in the y-direction.