(c) Formulate gradient descent for the objective function f. The learning rate should be $\alpha = 0{,}4$ and the initial point $x^0 = (x^0, y^0) = (2, 2)$.

```
function objective_function(x,y):
    return x^2+y^2+xy-5x-7y+20
ffun

function partial_derivate_x(x,y):
    return 2x+y-5
ffun

function partial_derivate_y(x,y):
    return 2y+x-7
ffun

function gradient_descent(initial_x, initial_y, learning_rate, max_iterations)
    x:= initial_x
    y:= initial_y

    for i from 1 to max_iterations
        gradient_x := partial_derivate_x(x,y)
        gradient_y := partial_derivate_y(x,y)

        x:= x - learning_rate * gradient_x
        y:= y - learning_rate * gradient_y
    ffor
ffun
```