

$$2x + 2y = 12 \quad | :2$$

$$x + y = 6 \quad y = 6 - x$$

$$A = f(x, y) = x \cdot y = x(6 - x)$$

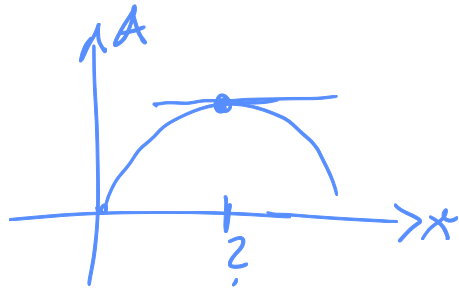
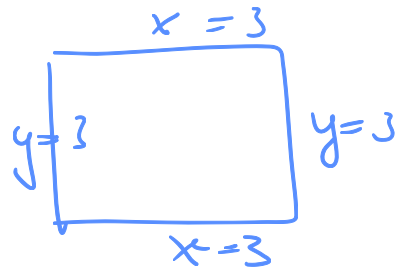
$$= 6x - x^2$$

↓ Ableiten

$$6 - 2x \stackrel{!}{=} 0$$

$$6 = 2x$$

$$\underline{x = 3}$$



$$y = 6 - 3 = 3 \quad \text{Quadrat}$$

$$\nabla f = \begin{pmatrix} \frac{\partial f}{\partial x} \\ \frac{\partial f}{\partial y} \end{pmatrix}$$

$$f(x, y) = x \cdot y$$

$$g(x, y) = \underline{2x + 2y - 12}$$

$$\begin{pmatrix} y \\ x \end{pmatrix}$$

$$\nabla g = \begin{pmatrix} \frac{\partial g}{\partial x} \\ \frac{\partial g}{\partial y} \end{pmatrix} = \begin{pmatrix} 2 \\ 2 \end{pmatrix}$$

$$\begin{pmatrix} y \\ x \end{pmatrix} = \lambda \cdot \begin{pmatrix} 2 \\ 2 \end{pmatrix} = \begin{pmatrix} 2\lambda \\ 2\lambda \end{pmatrix}$$

Elementweise:

$$y = 2\lambda$$

$$x = 2\lambda$$

$$x = y$$

also Quadrat

$$\text{NB } 2x + 2y = 12$$

$$2x + 2x = 12$$

$$\hookrightarrow x = 3$$

$$\underline{x = 3 = y}$$

$$\rightarrow y = 2\lambda$$

$$3 = 2\lambda, \quad \lambda = \frac{3}{2} = 1.5$$