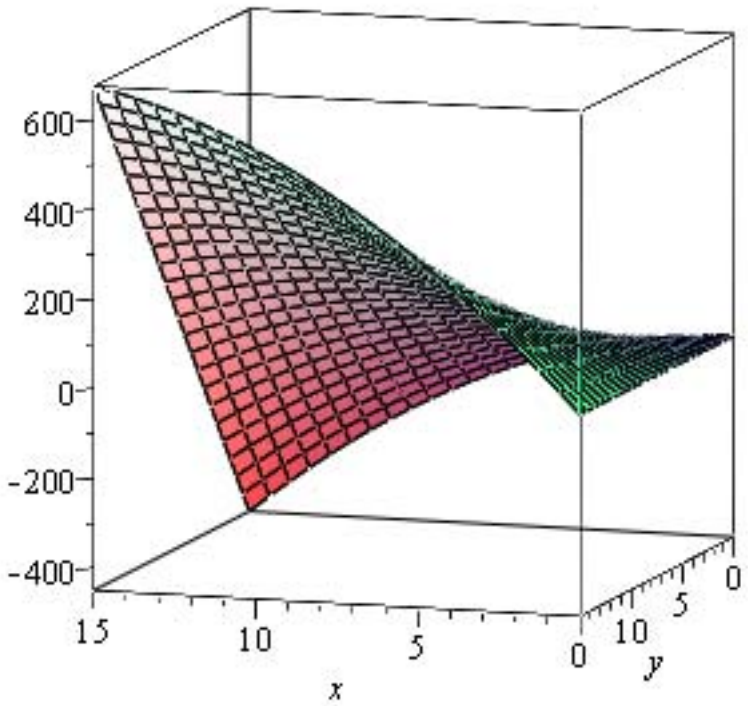
```
> restart : # SimpleContinuous.mw
> f := (x, y) → -2·x^2 + 5·x·y
```

$$f := (x, y) \rightarrow -2\,x^2 + 5\,x\,y \tag{1}$$

```
> plot3d( f(x, y), x = 0..15, y = 0..15, axes = boxed)
```




```
> with(Optimization)
```

[*ImportMPS, Interactive, LPSolve, LSSolve, Maximize, Minimize, NLPSolve, QPSolve*] **(2)**

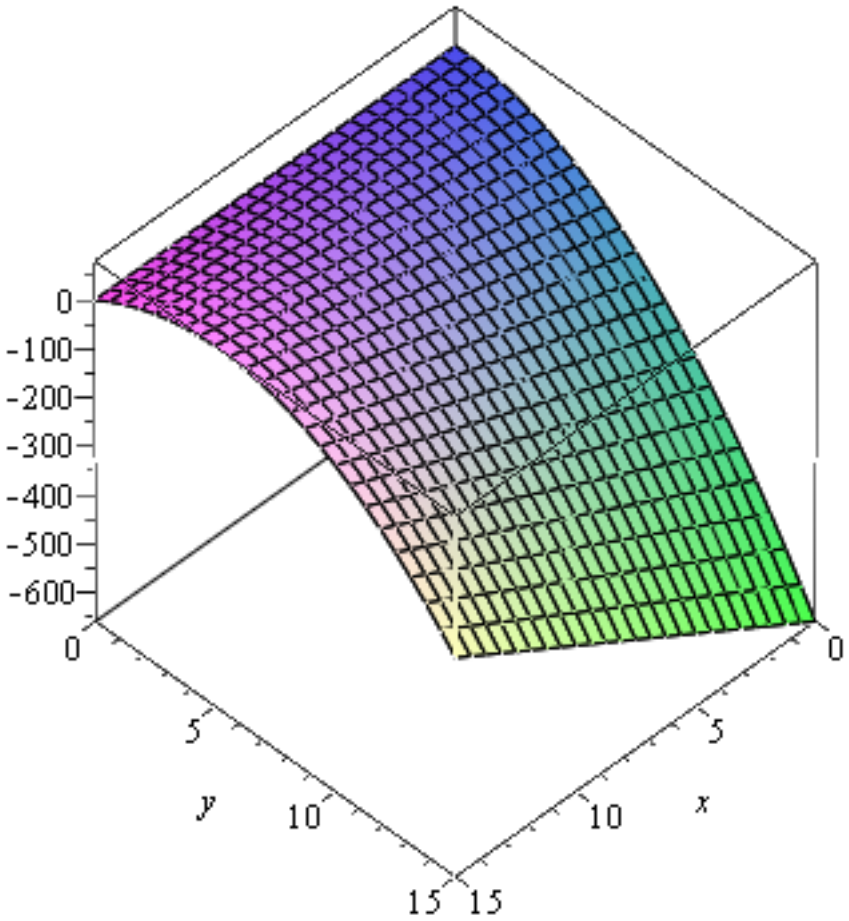
```
> NLPSolve( f(x, y), x = 0..15, y = 0..15, maximize)
```

[675., [x = 15., y = 15.]] **(3)**

```
> g := (x, y) → -3·y^2 + 2·x·y + y
```

$$g := (x, y) \rightarrow -3\,y^2 + 2\,x\,y + y \tag{4}$$

```
> plot3d(g(x, y), x = 0..15, y = 0..15, axes = boxed)
```



> $NLPSolve(g(x,y), x=0..15, y=0..15, maximize)$

$$[80.0833333333333286,\ [x = 15.,\ y = 5.16666666666666606]] \quad \textbf{(5)}$$

> $fx := diff(f(x,y), x);\ gy := diff(g(x,y), y)$

$$fx := -4x + 5y$$
$$gy := -6y + 2x + 1 \quad \textbf{(6)}$$

> $solve(\{fx, gy\}, \{x, y\})$

$$\left\{x = \frac{5}{14},\ y = \frac{2}{7}\right\} \quad \textbf{(7)}$$

> $assign(\%)$

> x, y

$$\frac{5}{14},\ \frac{2}{7} \quad \textbf{(8)}$$

> $f(x,y);\ g(x,y)$

$$\frac{25}{98}$$
$$\frac{12}{49} \quad \textbf{(9)}$$

>