

## Example: database export

The electric power,  $P$ , which is delivered by the battery as a function of the resistance,  $R$ , is:

$$P := \frac{100 R}{(0.5 + R)^2}$$

dependence on electric power of resistance

Find the maximum power of  $P$  for  $0 \leq R \leq 20$  and export the dependence data so we can use them later on.

### Solution:

We have the dependence function, which we will use to calculate the first derivative of the function and use it to find it's maximum.

$$a := \frac{d}{dR} P$$

We created variable,  $a$ , as a container for the derivative of function

$$\text{maxPower} := \text{nonlinsolve}(a == 0, R)$$

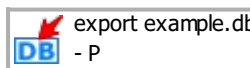
Null of the first derivative is the extremum point

$$\text{maxPower} = 0.5$$

Variable,  $\text{maxPower}$ , contains the maximal power of  $P$

$$P := \text{curve2d}\left(\frac{100 R}{(0.5 + R)^2}, R, 0, 20, 200\right)$$

Dependence data which is to be exported



Exporting the data to the database

## Example: Database Import

The electric power  $P$ , which is delivered by the battery as a function of the resistance  $R$ , is:

$$P := \frac{100 R}{(0.5 + R)^2}$$

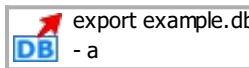
Dependence on electric power of resistance

Plot the power as a function of the resistance using the data saved in database file.

### Solution:

The graph confirms the calculations we performed in the Database export.mdd file.

$a := 0$  ← Define variable



← Import database object to import data from database into the variable  $a$

$a = 200 \times 2$  elements matrix ← Value after data import

