

Example: database export

The electric power represented by the letter, P, 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 within in the range of $0 \leq R \leq 20$ and export the dependence data so we can use them later on.

Solution:

We have the dependence function, now we will 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 the function

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

Null of the first derivative is the extremum point

$$\text{maxPower} = 0.5$$

Variable 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 exported

database write("export example.db", "exam", P)

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 that we performed in the Database export.mdd file.

a := 0 ← Define the variable

database tables("export example.db") = $\begin{bmatrix} "P" \\ "exam" \end{bmatrix}$ ← Display the database tables
a := database read("export example.db", "exam") ← Import data from the database into the variable, a

a = 200 x 2 elements matrix ← Value after the data import

