

Example 2: chicken fence

Algebraic solution – short and long version

NOTE: You need TI-Nspire™ CAS for this approach.

1.1	BOG AUTO REELL
$\text{solve}(l+2\cdot h=10,l)$	$l=10-2\cdot h$
$l:=10-2\cdot h$	$10-2\cdot h$
$l\cdot h$	$2\cdot h\cdot(h-5)$
$\text{nfMax}(2\cdot h\cdot(h-5),h)$	2.5
$2\cdot h\cdot(h-5) h=2.5$	12.5
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The algebraic solution requires some previous mathematical knowledge (conditions for extreme values: side condition)

Open a new document and add an application **Calculator**. Type the different steps and finish your input with \cdot each time.

The following variables are introduced: l (length of side opposite the wall) and h (length of the remaining sides of the enclosure)

In the first line the side condition $l + 2h = 10$ is solved to $l = 10 - 2h$. This is an easy calculation which can also be applied to more complex terms in other extreme value problems. The next line establishes the connection between l and h , which is used in the third line to calculate the area by using the product of l and h . Now the variable l is replaced by the previous connection of variables. With $\text{nfMax}(\cdot)$ the maximum area is calculated dependent on h . The resulting solution gives $h = 2.5$ which is then inserted for h to calculate the maximum area.