



Mathematica Help Browser

Reduce

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Solve | DSolve | RSolve | Equal | ReplaceAll (/.) | Reduce

- When `expr` involves only polynomial conditions, `Reduce[expr, vars, Reals]` gives a cylindrical algebraic decomposition of `expr`.
- `Reduce` can give explicit representations for solutions to all linear equations and inequalities over the integers, and can solve a large fraction of Diophantine equations described in the literature.
- The following options can be given:

<code>Backsubstitution</code>	<code>False</code>	whether to give results unwound by backsubstitution
<code>Cubics</code>	<code>False</code>	whether to use explicit radicals to solve all cubics
<code>GeneratedParameters</code>	<code>C</code>	how to name parameters that are generated
<code>Modulus</code>	<code>0</code>	modulus to assume for integers
<code>Quartics</code>	<code>False</code>	whether to use explicit radicals to solve all quartics
- `Reduce[expr, { η_1, η_2, \dots }, Backsubstitution->True]` yields a form in which values from equations generated for earlier η_i are backsubstituted so that the conditions for a particular η_i have only minimal dependence on earlier η_j .

v.

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Reduce

`Reduce[expr, vars]`
 reduces the statement `expr` by solving equations or inequalities for `vars` and eliminating quantifiers.

`Reduce[expr, vars, dom]`
 does the reduction over the domain `dom`. Common choices of `dom` are `Reals`, `Integers`, and `Complexes`.

Details and Options

Examples

Basic Examples

Reduce equations and inequalities:

```

In[1]:= Reduce[x^2 + y^3 = 1, {x, y}, Integers]
Out[1]= {x == 1 & y == 0} | {x == -1 & y == 0} | {x == 0 & y == 1} | {x == 0 & y == -1}

```

Use specific domains:

```

In[2]:= Reduce[x^2 - 7y^2 == 1, {x, y}, {0, 1}, Integers]

```



Formula Manipulation



Manipulating Equations



Number Theory



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