

By Don Benson

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This is a new version of cSolve_n(). It finds real and complex solutions of n equations in n unknowns. The equations can be almost any type, not just linear. Some trig equations can be handled, but no more than one unknown angle. Some limitations have been removed in this version. The number of equations is no longer limited to 3 and unknowns are not limited to x , y , and z . Any variables can be used. The program is basically an enhanced version of the TI Solve and cSolve functions, but it is easier to use (no variable list to enter). Domain restrictions, such as $x > 0$ or $\theta > -\pi$ and $\theta \leq \pi$, can be entered. All entries can be edited. If there are more unknowns than equations, you can choose which to solve for. This means symbolic solutions can be found. Solutions are copied to the Home screen.

Place cSolve_n(), Display(), Replace(), Getnames(), and Copyto_h() in the same folder, then run cSolve_n().

Example 1.

Run cSolve_n()

2 equations

Equation 1

$$x^2 + y^2 = 16$$

Equation 2

$$y = 4x^2 - 8$$

Press ENTER, no domain limit

Solve

Real Only

4 Solutions displayed

Look for 1st quadrant solutions only

Edit

Edit Domain

$$x \geq 0 \text{ and } y \geq 0$$

Solve

Real Only

$$x = 1.7043$$

$$y = 3.6187$$

Example 2.

Run cSolve_n()

2 equations

Equation 1

$$p \cdot \cos(\theta) - \mu \cdot n = m \cdot a$$

Equation 2

$$p \cdot \sin(\theta) + n - m \cdot g = 0$$

Press ENTER, no domain limit

Solve

TOO MANY UNKNOWN

2 Allowed, Delete any 5

To solve for a and n , delete μ , θ , p , m , g

Real Only

$$a = \frac{-(g \cdot m \cdot \mu - p \cdot (\cos(\theta) + \sin(\theta) \cdot \mu))}{m}$$

$$n = g \cdot m - p \cdot \sin(\theta)$$