SIMULTANEOUS EQUATION CALCULATOR GOUGE (RREF)

(REDUCED-ROW-ECHELON FORMAT)

USING RREF TO SOLVE SIMULTANEOUS EQUATIONS:

GIVEN A SYSTEM OF EQUATIONS

$$9V_1 - 3V_2 = -96$$
$$2V_1 - 3V_2 = 8$$

ENTER: `rref([[[9,-3,-96][2,-3,8]])`

ANSWER:
$$\begin{bmatrix} 1 & 0 & -14.8571 \\ 0 & 1 & -12.5714 \end{bmatrix}$$

WHICH MEANS: $V_1 = -14.9V$ & $V_2 = -12.6V$

GIVEN:
$$41V_1 - 20V_2 - 15V_3 = 330$$
$$4V_1 - 10V_2 + 3V_3 = 96$$
$$7V_1 + 7V_2 - 18V_3 = -112$$

ENTER: `rref([[[41,-20,-15,330][4,-10,3,96]`
`[7,7,-18,-112]])`

ANSWER:
$$\begin{bmatrix} 1 & 0 & 0 & 9.83 \\ 0 & 1 & 0 & -3.00 \\ 0 & 0 & 1 & 8.88 \end{bmatrix}$$

WHICH MEANS:
$$V_1 = 9.83\,V$$
$$V_2 = -3.00V$$
$$V_3 = 8.88V$$

SIMULTANEOUS EQUATION CALCULATOR GOUGE
(SOLVE FUNCTION)

FOR MESH ANALYSIS, ONCE YOU HAVE BUILT YOUR LOOP EQUATIONS (NUMBER OF EQUATIONS SHOULD EQUAL NUMBER OF UNKNOWNS) YOU CAN USE THE SOLVE FUNCTION TO TAKE CARE OF THE MESSY BUSINESS.

EXAMPLE

LOOP 1: $-6I_1 - 4I_2 = -2$

AND

LOOP 2: $-4I_1 - 5I_2 = -6$

2 EQUATIONS, 2 UNKNOWNS... PLUG INTO CALCULATOR AS FOLLOWS: (WITH $X = I_1$ AND $Y = I_2$ FOR CONVENIENCE)

solve ($-6x - 4y = -2$ and $-4x - 5y = -6$, $\{x, y\}$) ENTER

- (: OPEN PARENTHESIS
- SPACES DON'T MATTER
- , : COMMA
- { } : SQUIGGLY BRACKETS
-) : CLOSE PARENTHESIS

$X = -1$ and $y = 2$

* PAY ATTENTION TO PARENTHESIS, COMMA, SIGNS, & AND. ALSO BE SURE THAT UNKNOWNS ARE IN THE SQUIGGLY BRACKETS { USE 2nd + Parenthesis TO GET THEM }

* THIS WILL WORK FOR MORE THAN 2 UNKNOWNS..., REMEMBER TO AND THE EXTRA EQUATION AND INCLUDE THE EXTRA UNKNOWN IN THE { }