Solving Equations Using Solve and Csolve on the TI-89

To solve an equation you must give the calculator the equation and then tell it which variable to solve for. In the home screen type

solve(*equation*, *variable***)**

There are several ways to enter the solve command:

- Type **solve(**
- Select it from the **Catalog** menu
- **F2: Algebra, 1:solve(**

If your calculator is set in auto mode, when you press **enter**, the answer will appear in "proper form" giving an exact answer. If you press **diamond enter**, the answer will be given as a decimal approximation.

If there are fractions in your equation, be sure to put the numerators and denominators in parentheses if needed.

Example: Solve $\frac{x-3}{5}+\frac{x}{8}=\frac{3}{4}$

F2: Algebra
1:Solve
Key in **(x-3)/5+x/8=3/4,x)**
Enter Answer is 54/13
Diamond Enter Answer is 4.1538

The solve command will only find real solutions. If you suspect that your equation has complex solutions, use the **csolve** command instead. It will give both real and complex solutions. Use any of the following to access the csolve command:

- Type **csolve(**
- Select csolve from the **Catalog** menu
- **F2:Algebra, Alpha A: Complex, 1:csolve(**

Use the same format: **csolve(***equation*, *variable***)**

Example: Solve $x^2-4x+8=0$

F2: Algebra

Alpha A: Complex
1:csolve(
Key in **x^2 - 4x + 8 = 0, x)**
Enter Answer is $2 + 2i$ or 2 - 2i

Example: Solve $4x^5 - 8x^4 - x + 2 = 0$

F2: Algebra
A: Complex
1:csolve(
Key in **4x^5 - 8x^4 - x + 2 = 0, x)**
Enter Answer is $\frac{i\sqrt{2}}{2}, \frac{-i\sqrt{2}}{2}, \frac{\sqrt{2}}{2}, \frac{-\sqrt{2}}{2}, 2$

There are 2 complex solutions and 3 real solutions. Two of the real solutions are irrational and one is rational.

If you are unsure about what type of solutions an equation will have, always use the csolve(command.