Math 170

Calculator Equation Solving

You may find that you want to use your calculator’s equation solving features on written homework or exams. Here are some things you need to know.

1. Your instructor, or the instructions in the problem, may require an algebraic solution. If so, put away your calculator — you are expected to do the algebra and show all your work.

2. Algebraic solutions are exact. Calculator solutions (depending on your machine) are usually approximations. It’s possible that you could lose a few points for turning in an approximate answer instead of an exact answer.

   Check with your instructor if you have doubts or questions.

3. If you use your calculator, you must communicate how you used your calculator and the output you got. In general you must (1) say what function or feature you used, (2) replicate whatever you typed into the calculator, and (3) state or show what came out of the calculator (including any graphs used).

   Here are three examples of what you might do and how to show your work. Suppose you want to solve the equation

   \[120t + 976 = 270t^2\]

   • If you used the graphing features to find the intersection of two curves, here’s what you should write:

     “I graphed the following functions on my calculator.”
     \[y_1 = 120x+976\]
     \[y_2 = 270x^2\]

     **Include a copy of the graph with axes labeled and scale shown.**
     “Using the intersection tool I found the two points of intersection: (-1.692,772.96), (2.136,1232.37). So two solutions are \(t = -1.692\) and \(t = 2.136\).”

   • If you rewrote the equation and set it equal to zero then used the graphing features to find the zeros, here’s what you should write.

     “I graphed the following function on my calculator.”
     \[y_1 = 120x + 976 - 270x^2\]

     **Include a copy of the graph with axes labeled and scale shown.**
     “Using the zero tool I found the two zeros: (-1.692,0) and (2.136,0). The two solutions are \(t = -1.692\) and \(t = 2.136\).”

   • If you used your calculator’s solve function (Ti-89 or Nspire), here’s what you should write.

     “I used the solve function on my calculator.”
     solve(120x+976=270x^2,x)

     “It gave two solutions. \(x = -1.692\) and \(x = 2.136\).”

4. If you have doubts or questions on if it is appropriate to use your graphing calculator and what work is required, ask your instructor.