

Projects are to be submitted on UNLINED (for instance, copier) paper. Write on only one side of each page. Leave room. Make it PROFESSIONAL-looking!

Project # 1. The three ways to solve a quadratic equation are:

1. Factoring
2. Completing the Square
3. Quadratic Formula

Solve each of the following quadratic equations in *all three ways*.

1. $x^2 + 4x - 21 = 0$
2. $6x^2 - x - 12 = 0$

Solve the following quadratic equation by *quadratic formula and completing the square*:

3. $x^2 - 6x - 5 = 0$

Discuss (1 page) the advantages and disadvantages of each method, and when one method might be preferred over another.

Project # 2. Completing the Square to graph a quadratic function.

Complete the square for each of the following and graph the function by transforming the function $f(x) = x^2$, using Section 1.5 techniques.

1. $g(x) = x^2 - 16x + 64$
2. $h(x) = 2x^2 - 3x + 6$
3. $w(x) = -x^2 + 4x - 15$

There is a [Handout for Basic Functions and Transformations](#) that you would be wise to reference. There is also a [Handout for Completing the Square and Graphing Quadratic Functions](#) and an [Accompanying Video](#)

Project # 3. Take-Home Test

1. I will deliver this test to you via e-mail.
2. This will coincide with Test 3, and count as *part* of the Test 3 score (20%),

Project # 4. The three kinds of Linear Systems

1. Submit three examples of linear systems in *three variables* and solve them using Gauss-Jordan reduction.
 - i. One of the three systems will be inconsistent.
 - ii. One of the systems will be consistent, with a unique solution.
 - iii. One of the systems will be consistent, with infinitely many solutions.
2. The student will discuss each system in a few sentences.