Name: _____

MATH 101
Summer 2022
HW 8: Due 06/08

"I do not know what I may appear to the world, but to myself I seem to have been only like a boy playing on the seashore, and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me."

–Issac Newton

Problem 1. (10pt) Use the discriminant to explain why the quadratic function $f(x) = x^2 - 4x + 13$ does not factor 'nicely.' Does the function factor 'nicely' over the complex numbers? Explain.

Problem 2. (10pt) Find the factorization of $x^2+9x-36$ the 'traditional' way. Then use the quadratic formula to factor $x^2 + 9x - 36$. Confirm that your factorization is correct.

Problem 3. (10pt) Use the quadratic formula to factor $2x^2 - 4x - 12$.

Problem 4. (10pt) Use the quadratic formula to factor $x^2 - 10x + 34$.

Problem 5. (10pt) Use the quadratic formula to factor $60x^2 - 2615x + 24200$.

Problem 6. (10pt) Showing all your work, solve the following equation:

$$9x - x^2 = -10$$

Problem 7. (10pt) Showing all your work, solve the following equation:

$$2(x^2 - 3) = -11x$$

Problem 8. (10pt) Showing all your work, solve the following equation:

$$x^2 = 6x - 7$$

Problem 9. (10pt) Showing all your work, solve the following equation:

$$x(2-x)=2$$

Problem 10. (10pt) Showing all your work, solve the following equation:

$$\frac{x+1}{x-3} = x+1$$