**LT #4: Solve systems of three equations using matrices/reduced row echelon form.**

**LT #5:** **Write equations in standard form for a circle given a set of three points.**

Steps for using your graphing calculator:

**Step 1:** Substitute all given points into the **general form** of a circle, individually.

**Step 2:** Simplify each equation to the form $Dx+Ey+F=c$

**Step 3:** Input the equations into a 3x4 matrix in your graphing calculator.

1. 2nd $x^{-1}$ (Matrix Menu)
2. Scroll over to the right to the EDIT menu.
3. Select a Matrix ($\left[A\right]$), change the dimensions to 3x4
4. Input the coefficients from the system of equations into the matrix.
5. 2nd Mode (Quit)

**Step 4:** Use the reduced row echelon form capabilities of your graphing calculator to solve for $D, E, F$.

1. Go back to the Matrix Menu (see step 3a above).
2. Scroll over to the right to the MATH menu.
3. Scroll down to **B: rref(**, and select by hitting ENTER.
4. Choose a matrix by going back to the Matrix Menu (see Step 3a), and scrolling down to $\left[A\right]$.

As long as you put the equations in the correct format, you will be given $D, E, F$ in the last column.

Try one:

$$2D+1E-2F=7$$

$$1D-2E-5F=-1$$

$$4D+1E+1F=-1$$

**Example:** Write the standard form of the equation of the circle that passes through points with the given coordinates. Then, identify the center and radius.

$$\left(0,0\right), \left(4,0\right), (0,4)$$

$$\left(1,3\right), \left(5,5\right), (5,3)$$