It's your job to send me a DETAILED list of any assignmetns you want to fix up. Everything must be wrapped up by th **day of the final. After the final, I will not respond to anymore homework extension requests.** If your grade in MyOpenM is far below 60, you will fail the class and have to do it again.

Section 6.1: **Systems of Equations:**

1. $\begin{cases} 2x+y=5 \\ 3x-2y=4 \end{cases}$, linear b/c it's x^1 and y^1.

solve 2x+y=5 for y: $y=5-2x$ (or x..makes no difference, but y is easier)

    replace y in equation 2 with 5-2x:
    $3x-2(5-2x)=4 \Leftarrow$ replace y with 5-2x...so method is called "substitution"
    $3x-10+4x=4$ Since x=2, and $y=5-2x$:
    $7x-10=4$ $y=5-2\cdot2=5-4=1$
    $7x=14$ point: $(2, 1)$
    $x=2$

2. solve $\begin{cases} x+y=4 \\ x-y=2 \end{cases}$ add the equations b/c we have +y and -y: $x+y+x-y=4+2$ addition/elimination
                                               $2x=6$
                                               $x=6/2=3$

multiply equation 1 by -1: $-x-y=-4$ solution $point$ is $(3,1)$
add equation 2: $x-y=2 \Downarrow +$
                           $-2y=-2$
                         $y=-2/-2=1$

When we have $\begin{cases} ax+by=c \\ dx+ey=f \end{cases}$, x and y are the variables and each is raised to the 1st, so it's called a linear system.

                       substitution or addition/elimination

Non-Linear System: $\begin{cases} x^2-2y=25 \\ x^2+5y=25 \end{cases}$ non-linear b/c we have x^2

Multiply equation 1 by -1 (every single term) $-x^2+2y=-25$ Get x:
                                           replace y with 0 in equation 1:(or 2)
         add equation 2: $+x^2+5y=25 \Downarrow +$ $x^2-2\cdot0=25$ points are
                             $0x^2+7y=0$ $x^2=25$ $(+5,0),(-5,0)$
                                  $7y=0$ $\sqrt{x^2}=\pm\sqrt{25}$
                                  $y=0$ $x=\pm5$

solve the system: $\begin{cases} x^2-2y=9 \\ x^2+5y=9 \end{cases}$ $\Rightarrow$ multiply bottom by -1 : $-x^2-5y=-9$
                                                 $x^2-2y=9$
                                         ———————— tally line
                                         $-7y=0$
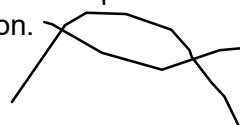
Replace y with 0 in bottom equation: $y=0$
$x^2+5(0)=9$
$x^2=9$ points: $(-3,0),(3,0)$. Each equation like $x^2-2y=9$ is a parabola, and so we have
$\sqrt{x^2}=\pm\sqrt{9}$ two points of intersection.
$x=\pm3$ two points

                                                                  no solutions

Solve the system by graphing: $\begin{cases} y=(x+3)+4 \\ y-4=(x+3)^2 \end{cases}$ one point

                                     $\xrightarrow{\text{isolate y}}$ $\begin{cases} y=x+7 \\ y=(x+3)^2+4 \end{cases}$ graph each RHS!

A THING is not the same as the NAME by which its known.

graph $y = x+7 \Rightarrow y = \dfrac{1}{1}x+7$ (slope is 1/1 and y intercept is 7)

recall 1/1 is same as -1/-1

$\dfrac{1}{1} = \dfrac{-1}{-1} = \mathbf{1}$

graph $y = (x+3)^2 + 4 = [x - (-3)]^2 + \mathbf{4}$

parent parabola: $y = x^2$

basic parabola points:

$(-1, 1) \rightarrow$ -3 on x $\rightarrow (-4, 1) \xrightarrow{\text{add 4 to y}} (-4, 5)$

$(0, 0) \rightarrow -3$ on x $\rightarrow (-3, 0) \xrightarrow{\text{add 4 to y}} (-3, 4)$

$(1, 1) \rightarrow -3$ on x $\rightarrow (-2, 1) \xrightarrow{\text{add 4 to y}} (-2, 5)$

remember that y=(x+3)^2 +4 is a parabola, so it should be curved! So solution points are $(-3, 4)$ and $(-2, 5)$

$y = x+7$