Math 11: unit 3.1: Systems of Equations: solve by graphing: linear systems ( $y=m x+b$ )
-remember: $\mathrm{y}=\mathrm{mx}+\mathrm{b}$. Also, m (slope )=
A. What is a system of equations?
B. How to solve it?
-look for an ordered pair that satisfies both equations. -look for an intersection of lines.
$E x: y=x+2$ and $y=-x+8$. Graph and find the intersection point.

Problem: even if we use a graphing calculator, it may be to find the $\qquad$ ordered pair....so may need to estimate.

Try: solve by graphing
1.
$y=-x+5$ and $y=x-7$
2) $y=2 x-3$ and $y=-x+6$
3. WITHOUT graphing, can we predict the number of solutions for a linear system of equations?

$$
\text { If } y=m x+b \text { and if } \quad m \text { (slope })
$$

$$
\begin{aligned}
\text { Ex: } y & =2 x+6 \\
y & =2 x+8
\end{aligned}
$$

$E x: y=-3 x+5$
$2 y=-6 x+10$
$E x: y=-2 x+4$
$y=-\frac{1}{2} x+3$

Do: handout pg 11 \#1-24 even, 25-30, 32

Math 11: unit 3.2 - solving by graphing continued - linear quad and quadquad systems system of equations (Chp 4 - Mickelson)
A. Remember, what does 'solving by graphing' mean? -we want to find the intersection points of the equations

Ex: graphically solve: $y=x-1$ ad $y=$
B. How to graphically solve systems of linear-quadratic equations? -3 possible solutions:
i.
ii)
iii)

Ex: solve by graphing: $y=4 x+3$ and $y=2 x^{2}+8 x+3$

Ex: graphically solve $y=x+7$ and $y=(x+2)^{2}+3$

Try: solve by graphing: $y=-x+5$ and $y=$

Do: WB pg 113 \#1ac, 3

- handout: choose 5
C) How solve quadratic-quadratic systems of equations? -4 possibilities:
i.
ii)
iii)
iv)

Ex: solve by graphing: $y=-5(x-1)^{2}+5$ and $y=-5(x-2)^{2}+5$

WB: pg 113 \#1df, 4, 5d-f

## Math 11 Unit 3.3: solving algebraically

A. What does 'solving algebraically' mean?
-before: graphically:
advantage:
disadvantage:
-now: use algebra to find $\qquad$ that works for the equations in the system.
advantage:
disadvantage:
B. How to do it?
-2 methods:
i. Solving by substitution (linear-linear)

Ex: $3 x-2 y=-12$
$x-4 y=8$

Ex: $x-4 y=8$ $2 x-8 y=8$

Ex: $x+y-4=0$
$2 x=8-2 y$
ii) solving by substitution (linear-quadratic)

Ex: $5 x-y=10$
$x^{2}+x-2 y=0$
iii) solving by substitution: (quadratic-quadratic)

Ex: $x^{2}-2 x+3 y=9$
$5 x^{2}-10 x+y=0$
-do: Mickelson WB pg 121 \#1,2: pick 5 from each optional: handout \#9-23 (left column)
-quiz: solve by graphing and algebraically(substitution)

Math 11: unit 3.4 - solving by elimination (linear-linear)
A. Why should we solve by elimination, when we already can solve by graphing and substitution?
-substitution is best when:
-if no coefficient $=1$ or $=-1$, then substitution can still work, but very messy.. $\qquad$ may be easier.
B. How to do it?
ex: $3 x+2 y=19$
$5 x-2 y=5$

Ex: $3 x+2 y=19$
$3 x+5 y=4$
C. What if we can't +/- to eliminate because no common coefficients?
-then we $\qquad$ to get the LCM for 1 of the variables, then do the same as before.

$$
\text { Ex: } \begin{array}{r}
3 x+4 y=2 \\
4 x+2 y=8
\end{array}
$$

-but What if it's a rational expression?
-get rid of the fractions by $\qquad$ by the $\qquad$ .

Ex: $\quad \frac{x+3}{2}+\frac{y-3}{4}=1 \quad$ and

Math 11: unit 3.5: solving by elimination (quad-quad) and discriminant
-note: can't eliminate $\qquad$ so we eliminate $\qquad$
$E x: y=4 x^{2}+8 x+4$

$$
y=3 x^{2}-2 x-5
$$

-can also use quadratic formula to help you solve for $x$ Ex: $x^{2}+10 x+9$
B. How can we use the discriminant? -remember the discriminant is used to $\qquad$ the number of $\qquad$ . -the discriminant is:

$$
\begin{array}{ll}
\text { if } & >0, \text { then } \\
\text { if } & =0, \text { then } \\
\text { if } & <0, \text { then }
\end{array}
$$

$E x: x^{2}+10 x+9=0$. Determine the nature of the roots.
-do WB pg 121 \#2: choose 5 more handout \#1-10(even) and \#33-42( your choice of 5)
-next period: quiz on Unit 3 and homework check
-pretest/corrections/test

