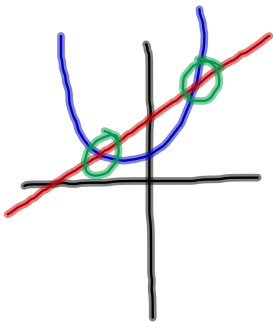


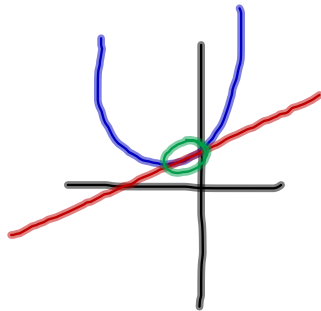
## 20.10 Solution of Systems of Equations

**Case 1:**  $y = x + 1$   
 $y = x^2 - 2x + 1$



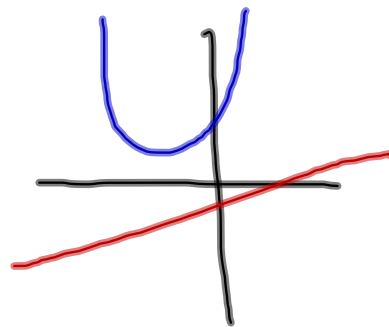
2

**Case 2:**  $y = 2x - 3$   
 $y = x^2 - 2x + 1$



1

**Case 3:**  $y = x - 2$   
 $y = x^2 - 2x + 1$



0

no real sol.  
1 imaginary sol.

Solve graphically:

$$9x^2 + y^2 = 9$$

$$3x - y = 3$$

**STEPS:**

1. Put both equations in  $y =$  form
2. Graph both equations
3. Find where they cross
4. Plug into the originals to check

Solve graphically and check:

$$y = x^2 - 4x + 3$$

$$y = x - 1$$

$$(1, 0)$$

$$(4, 3)$$

Solve Algebraically and Check:

$$y = 2 - x^2$$

$$-2x + y = 4$$

$$\begin{aligned} & \cancel{-2x + 2 - x^2} = 4 \\ & \cancel{+2x - 2 + x^2} + 2x - 2 + x^2 \end{aligned}$$

$$0 = x^2 + 2x + 2$$

$$x = \frac{-2 \pm \sqrt{-4}}{2}$$

$$x = \frac{-2 \pm 2i}{2}$$

$$x = \cancel{2} \frac{(-1 \pm i)}{\cancel{2}}$$

$$\begin{aligned} -2x + y &= 4 \\ -2(-1+i) + y &= 4 \\ \cancel{2} - 2i + y &= 4 \\ -2 + 2i & \quad -2 + 2i \end{aligned}$$

$$y = 2 + 2i$$

STEPS:

1. Put both equations in y=form

2. Solve for x

3. Plug back in to find y

OR

1. If one equation is in x= or y= form plug it into the other equation

$$\begin{aligned} & b^2 - 4ac \\ & 4 - 4(1)(2) \\ & 4 - 8 = -4 \end{aligned}$$

$$\begin{aligned} x &= -1 + i & y &= 2 + 2i \\ x &= -1 - i & y &= 2 - 2i \end{aligned}$$

**Solve algebraically:**

$$y = x^2 - 2x + 3$$

$$2x - y = 2$$

**Homework: pg 963 # 21,26 graph  
22,26 alg**