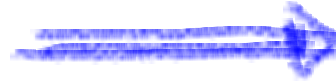


① HW Help



WARM UP

pick up



①

Solve for n

$$2m - (3+n) = 100m$$

$$\underset{-2m}{2m} - 3 - n = \underset{-2m}{100m}$$

$$\underset{+3}{-3} - n = \underset{+3}{98m}$$

$$-n = 98m + 3$$

$$n = -98m - 3$$

② Solve $\frac{1}{3}|10-x| = 10$ multiply by 3

$$|10-x| = 30$$

$$10-x = 30 \quad 10-x = -30$$

-10 -10 -10 -10

$$-x = 20 \quad -x = -40$$

$$x = -20$$

$$x = 40$$

③ Solve the inequality directly

$$2|x-5| \geq 13$$

$$-5 > -4$$

$$|x-5| \geq 6.5$$

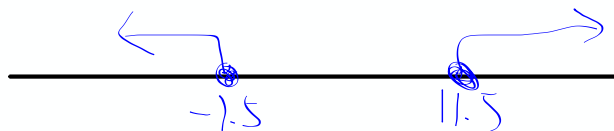
$$x-5 \geq 6.5$$

+5 +5

$$x-5 \leq -6.5$$

+5 +5

$$x \geq 11.5 \text{ or } x \leq -1.5$$



$$(4) \quad 4m^5 \cdot 3m^{-7} = 12m^{-2} \rightarrow \frac{12}{m^2}$$

$$(5) \quad \frac{\cancel{x^2}}{w^{-7}} \cdot \frac{x^3 w^2}{\cancel{x}} = x^4 w^2 w^7 \rightarrow x^4 w^9$$

$$(6) \quad \left(\frac{m^5 n^{-3}}{y} \right)^{-2} = \frac{m^{-10} n^6}{y^{-2}} \rightarrow \frac{n^6 y^2}{m^{10}}$$

$$\left(\frac{y}{m^5 n^{-3}} \right)^2 \rightarrow \frac{y^2}{m^{10} n}$$

HW
Questions



4-22. Solve $(x - 3)^2 - 2 = x + 1$ graphically

4-23. Graph a system of equations to solve $2|x - 4| - 3 = \frac{2}{3}x - 3$.

4-24. Solve each of the following equations using any method.

a. $-3\sqrt{2x-5} + 7 = -8$

b. $2|3x+4| - 10 = 12$

4-27. Solve the following equations. Be sure to check your answers for any extraneous solutions.

a. $\sqrt{2x-1} - x = -8$

$$(\sqrt{2x-1})^2 = (x-8)^2$$

$$x^2 = 64$$

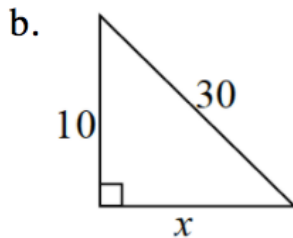
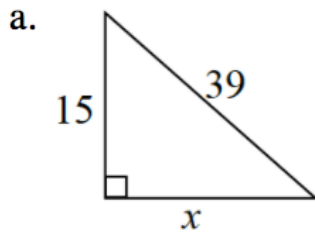
$$2x-1 = (x-8)(x-8)$$

↓

on
27b
you can use
a similar
strategy

b. $\sqrt{2x-1} - x = 0$

4-28. Find the value of x .



Use the solutions to check your answers carefully.

- You have 5 minutes.
-Use a pen, record your scores

AIM today:

- Determine the solutions to more complex SYSTEMS of equations .

What do solutions to systems look like ?

-

What do solutions look like?

$$\frac{2}{x} = 5\sqrt{x+5} - 6$$

Not a system

$$x =$$

$$x + 2y = 7$$

$$3x - y^2 = 18$$

A complex system

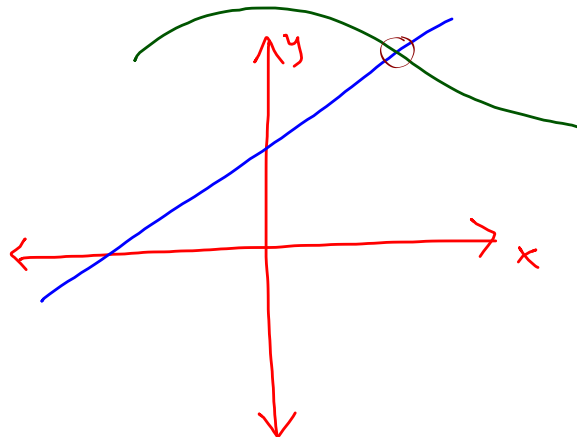
$$x = \quad y =$$

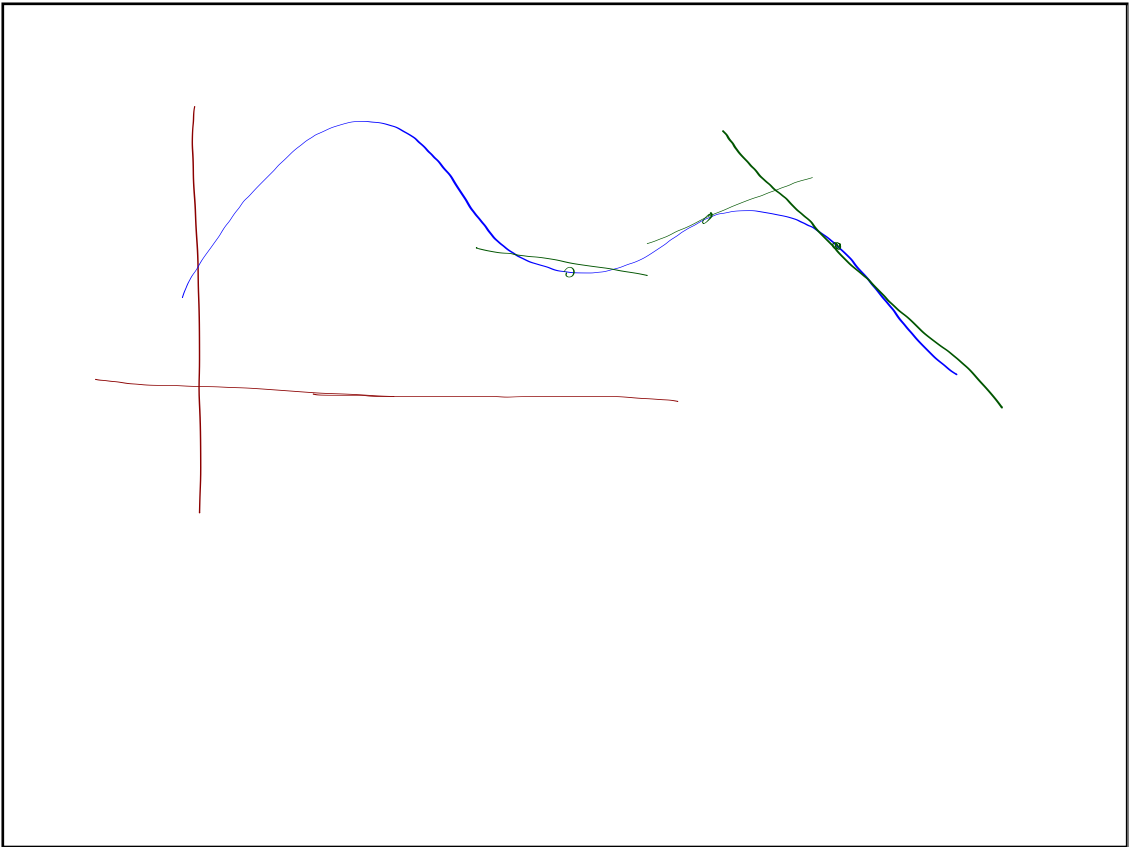
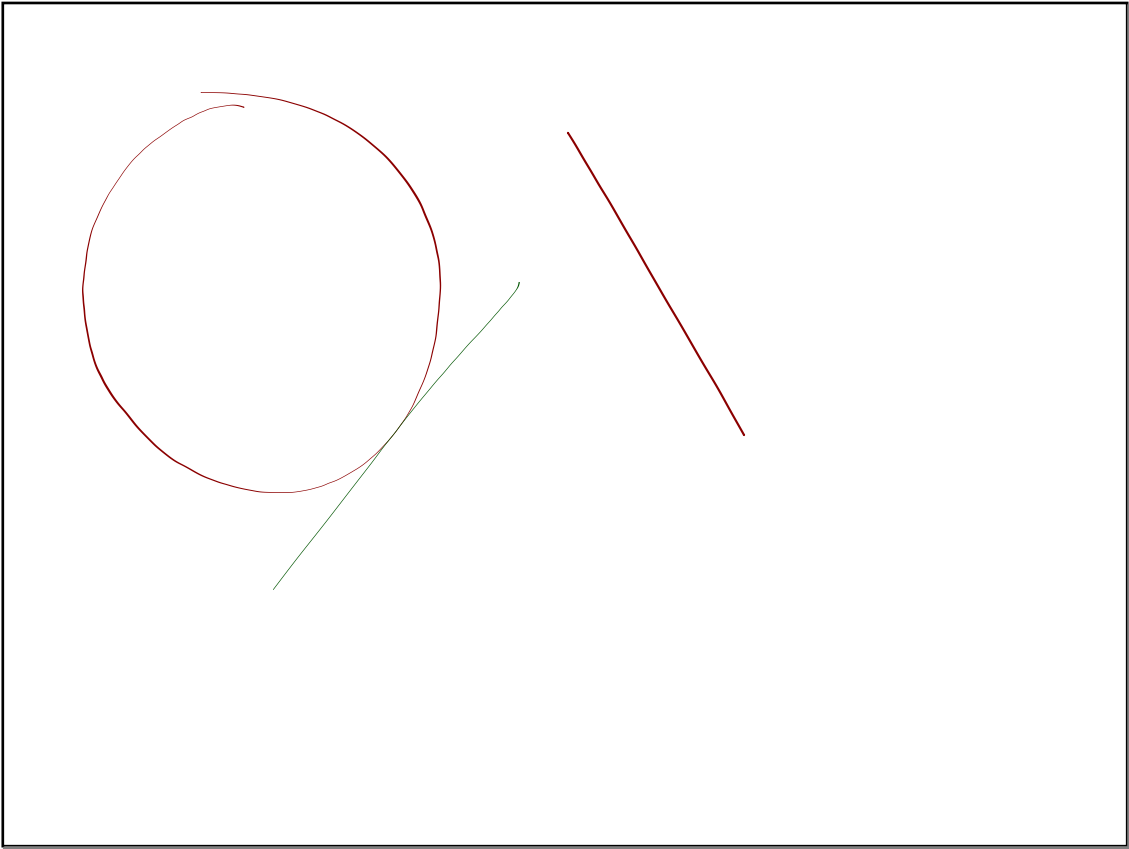
$$(x, y)$$

The solution of a system of equations will be a pair of values

$$x + 2y = 7$$

$$3x - y^2 = 18$$





Four Systems

- Solve algebraically
- Then comment what each solution tells about the graph.

a

$$y = -3x + 5$$
$$y = -3x - 1$$

$$-3x - 1 = -3x + 5$$

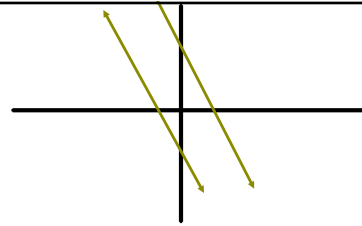
(a) $y = -3x + 5$
 $y = -3x - 1$

$$-3x + 5 = -3x - 1$$

$$5 = -1$$

a false statement which means....

NO SOLUTIONS



What did the solution tell us?

No solutions indicate that the two do not intersect.

(b)

$$y = \frac{1}{2}x^2 + 1$$

$$y = 2x - 1$$

$$\frac{1}{2}x^2 + 1 = 2x - 1$$

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

$$x^2 - 4x + 4 = 0$$

↓

$$x = 2$$

$$x = 2$$

$$y = 3$$

$$(2, 3)$$

$$\textcircled{b} \quad y = \frac{1}{2}x^2 + 1$$

$$y = 2x - 1$$

$$\frac{1}{2}x^2 + 1 = 2x - 1$$

$$\frac{1}{2}x^2 = 2x - 2$$

← clear fractions

$$x^2 = 4x - 4$$

$$x^2 - 4x + 4 = 0$$

$$x = 2 \rightarrow \begin{matrix} x = 2 \\ y = 3 \end{matrix}$$

$$\textcircled{b} \quad y = \frac{1}{2}x^2 + 1$$

$$y = 2x - 1$$

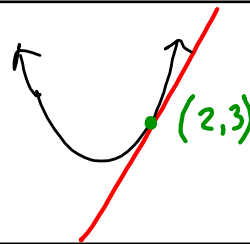
$$\frac{1}{2}x^2 + 1 = 2x - 1$$

$$\frac{1}{2}x^2 = 2x - 2$$

$$x^2 = 4x - 4$$

$$x^2 - 4x + 4 = 0$$

$$x = 2 \rightarrow \begin{matrix} x = 2 \\ y = 3 \end{matrix}$$



What did the solution tell us?

The line is tangent to the parabola.

at (2,3)

$$(y^3) = x$$

$$y = x - 2$$

$$(y+2) = x$$

$$y^2 = y + 2$$

$$y^2 - y - 2 = 0$$

↓

$$y = -1 \quad y = 2$$

$$(1, -1) \quad (4, 2)$$

© $y^2 = x$

$$y = x - 2$$

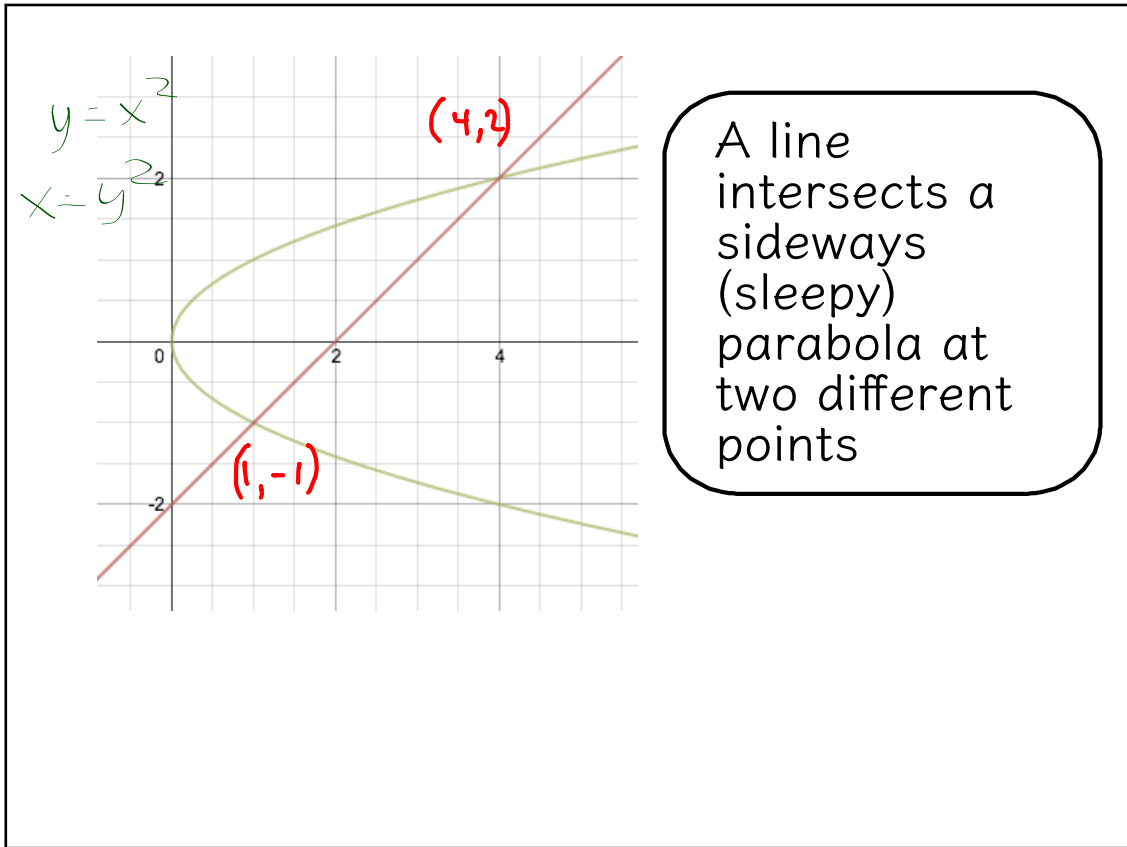
$$y = y^2 - 2$$

$$0 = y^2 - y - 2$$

$$0 = (y+1)(y-2)$$

$$\left. \begin{array}{l} \\ \\ \end{array} \right\} y=2 \quad y=-1 \checkmark$$

$$(, 2) \quad (, -1)$$



2 minute brain break

J How many solutions do you expect this system to have?

$$x^2 + y^2 = 25$$

$$y = x^2 - 13$$

$$x^2 + (x^2 - 13)^2 = 25$$

$$(x^2 - 13)(x^2 - 13)$$

$$x^2 + y^2 = 25 \rightarrow x^2 = 25 - y^2$$

$$y = x^2 - 13$$

$$x^2 = y + 13$$

$$25 - y^2 = y + 13$$

$$0 = y^2 + y - 12$$

↓

$$y = -4 \quad y = 3$$

$$(-3, 4) \quad (3, 4)$$

$$x^2 = y + 13$$

$$x^2 = -4 + 13$$

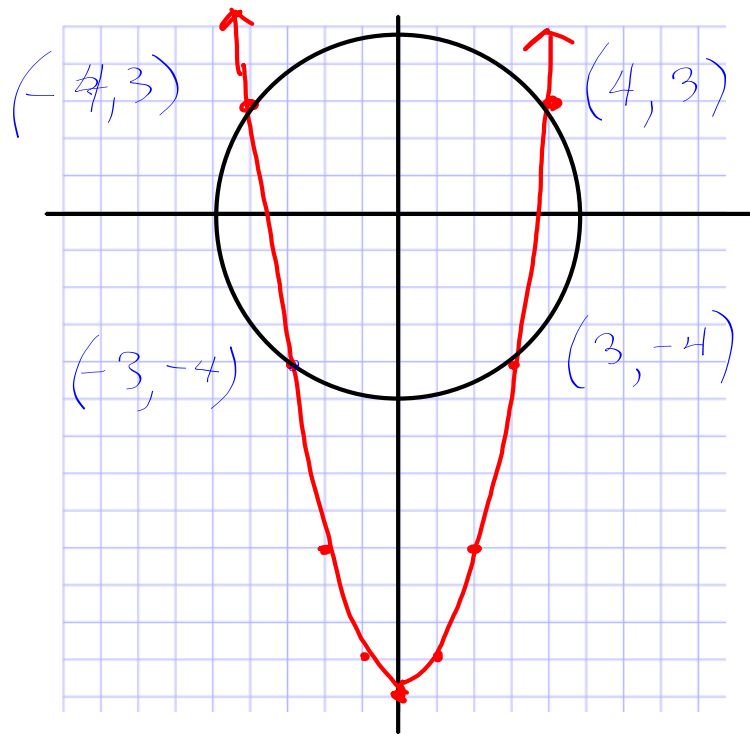
$$x^2 = 9$$

$$x = 3 \quad x = -3$$

$$x^2 + y^2 = 25$$

$$y = x^2 - 13$$

⑥



Algebraically, find all 4 solutions

(c) $x^2 + y^2 = 25$ $y = x^2 - 13$ the difficult way

$$x^2 + (x^2 - 13)^2 = 25$$
$$x^2 + (x^2 - 13)(x^2 - 13) = 25$$

yikes!

or

$$x^2 + y^2 = 25$$

$$y = x^2 - 13$$

the easier way

$$x^2 = y + 13$$

$$\sqrt{\quad} \quad \sqrt{\quad}$$

$$x = \pm \sqrt{y + 13}$$

$$(\pm \sqrt{y + 13})^2 + y^2 = 25$$

$$y + 13 + y^2 = 25$$

$$y^2 + y - 12 = 0$$

$$y = -4 \quad y = 3$$

(d)

$$y = -4$$

$$y = 3$$

$$x^2 + y^2 = 25$$

$$y = x^2 - 13$$

$$-4 = x^2 - 13$$

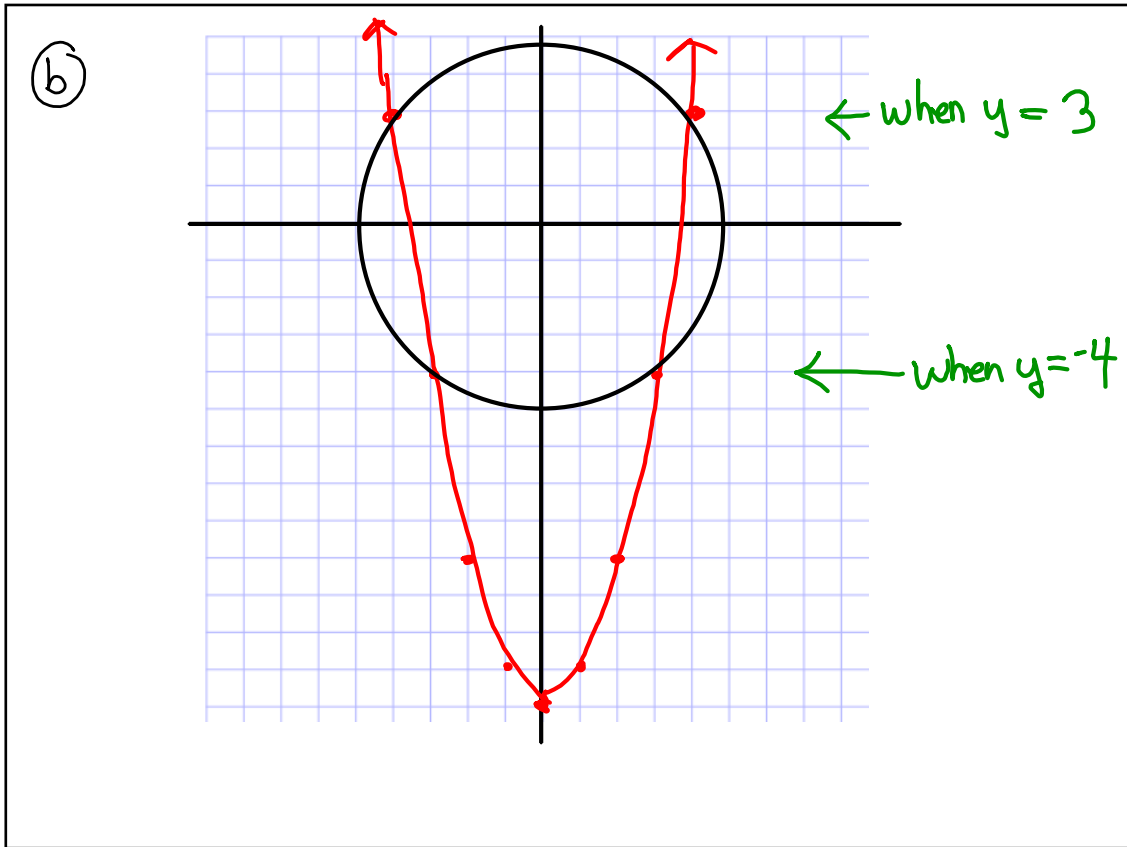
$$9 = x^2$$

$$x = \pm \sqrt{9}$$

$$x = \pm 3$$

two of the four points are $(-3, -4)$ and $(3, -4)$

then plug in $y = 3$ to find the other two



See your Ch 3 Test,
finally

Assignment

4..... 40 - 43, 44c

↑
post

