

① HW Help



②

WARM UP

↑
pick up

① Solve for n

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

$-2m$ $-2m$

$$-(3+n) = 98m$$

$$(3+n) = -98m$$

$$3+n = -98m$$

$$n = -98m - 3$$

② Solve

3. $\frac{1}{3}|10-x| = 10.$

$|10-x| = 30$

$10-x = 30$
 -10

$10-x = -30$
 -10

$-x = 20$

$-x = -40$

$x = -20$ $x = 40$

③ Solve the inequality directly

$2|x-5| \geq 13$

$|x-5| \geq 6.5$

$x-5 \geq 6.5$
 $+5$ $+5$

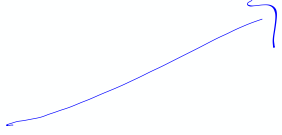
$x-5 \leq -6.5$
 $+5$ $+5$

$x \geq 11.5$ or $x \leq -1.5$

$$\textcircled{4} \quad 4m^5 \cdot 3m^{-7} = 12 m^5 m^{-7} = 12 \cdot m^{-2} = \boxed{\frac{12}{m^2}}$$

$$\textcircled{5} \quad \frac{x^2}{w^{-7}} \cdot \frac{x^3 w^2}{x_1} = x^4 w^2 w^7 \quad \boxed{x^4 w^9}$$

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

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


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

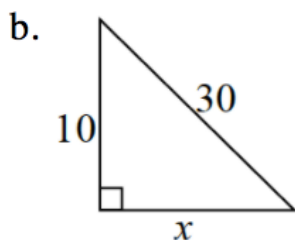
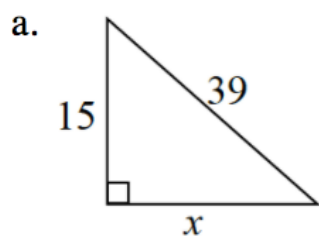
b. $2|3x+4| - 10 = 12$

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

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

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 meaning of the solutions of systems (as they relate to their graphs)
- Find solutions to complex systems

$$\begin{aligned}2x - 3y &= 7 \\ 5x + 22y &= 18\end{aligned}$$

What do solutions to systems look like?

-

What do solutions look like?

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

Not a system

$$x + 2y = 7$$

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

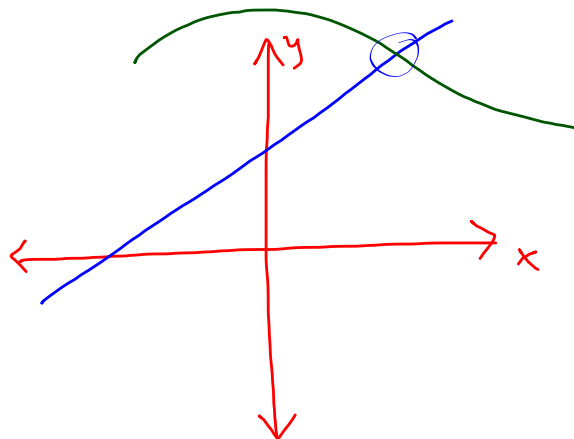
A complex system

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

~~$$\frac{1}{2}x^2 - 7 = 18$$~~

$$x + 2y = 7$$

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



Follow the instructions on the **hand out**

You can do the work on the hand out or in your own notes. This work will be a good resource for tonight's assignment and upcoming work.

be sure to.

After each
question



What did the
solution tell us
about the graph?

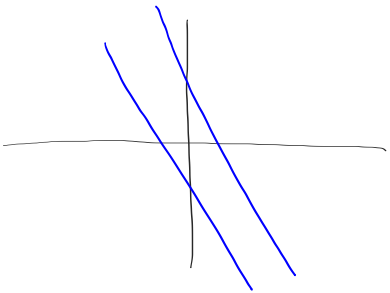
Be on the look out
for strategies that your
peers are using that
are different than yours.

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

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

$5 = -1$
 false statement

NO SOLUTIONS

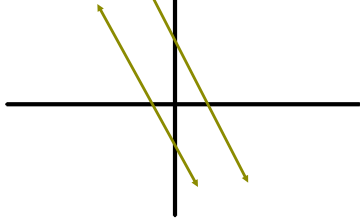


Parallel lines mean there are no intersections

(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.

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

$$y = 2x - 1$$

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

$$y = 2x - 1$$

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

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

multiply by 2

← clear fractions

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

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

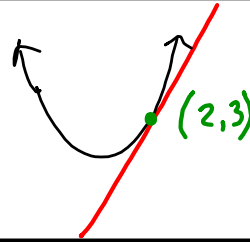
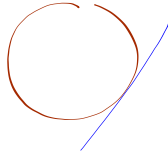
↓

$$x = 2$$

$$\begin{aligned} x &= 2 \\ y &= 3 \end{aligned}$$

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

$$y = 2x - 1$$



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

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

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

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

$(2,3)$

$$x = 2 \rightarrow$$

$$x = 2$$

$$y = 3$$

What did the
solution tell us?

The line is tangent
to the parabola.

at $(2,3)$

$$\textcircled{c} \quad y^2 = x$$

$$y = x - 2$$

③ $y^2 = x$
 $y = x - 2$

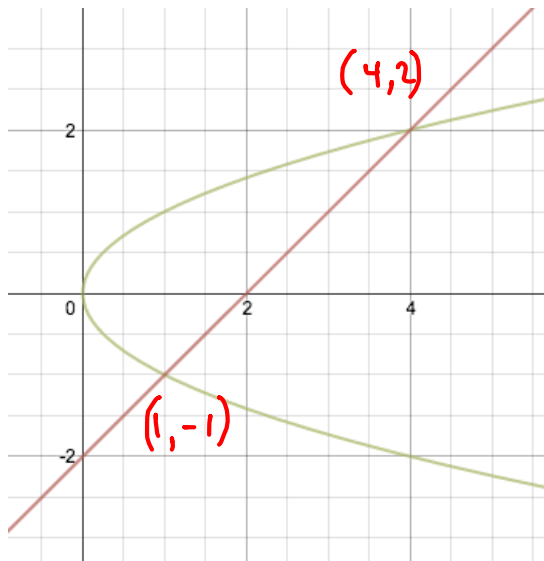
$$y = y^2 - 2$$

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

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

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

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



A line intersects a sideways (sleepy) parabola at two different points

$$\text{d) } 4x - 2y = 10$$

$$y = 2x - 5$$

$$\text{d) } 4x - 2y = 10$$

$$y = 2x - 5$$

$$4x - 2(2x - 5) = 10$$

$$4x - 4x + 10 = 10$$

$$10 = 10$$

true

infinite
of solutions

What did the
solution tell us?

Infinite
solutions
indicate the
same line.

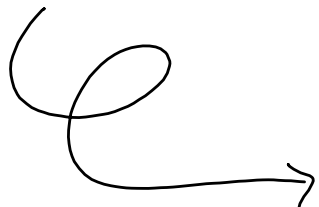
2 minute brain break

How many solutions
do you expect
this system
to have?

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

$$y = x^2 - 13$$

with that
in mind

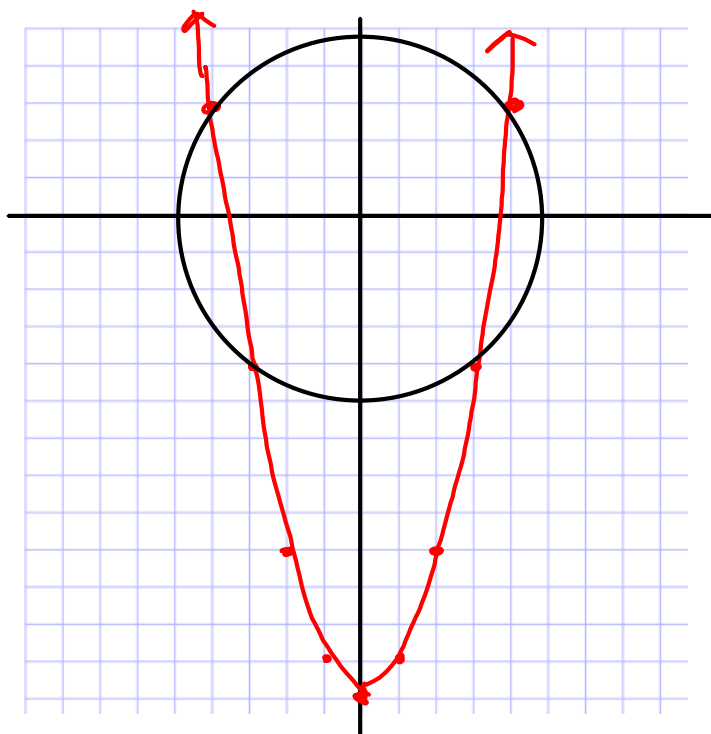


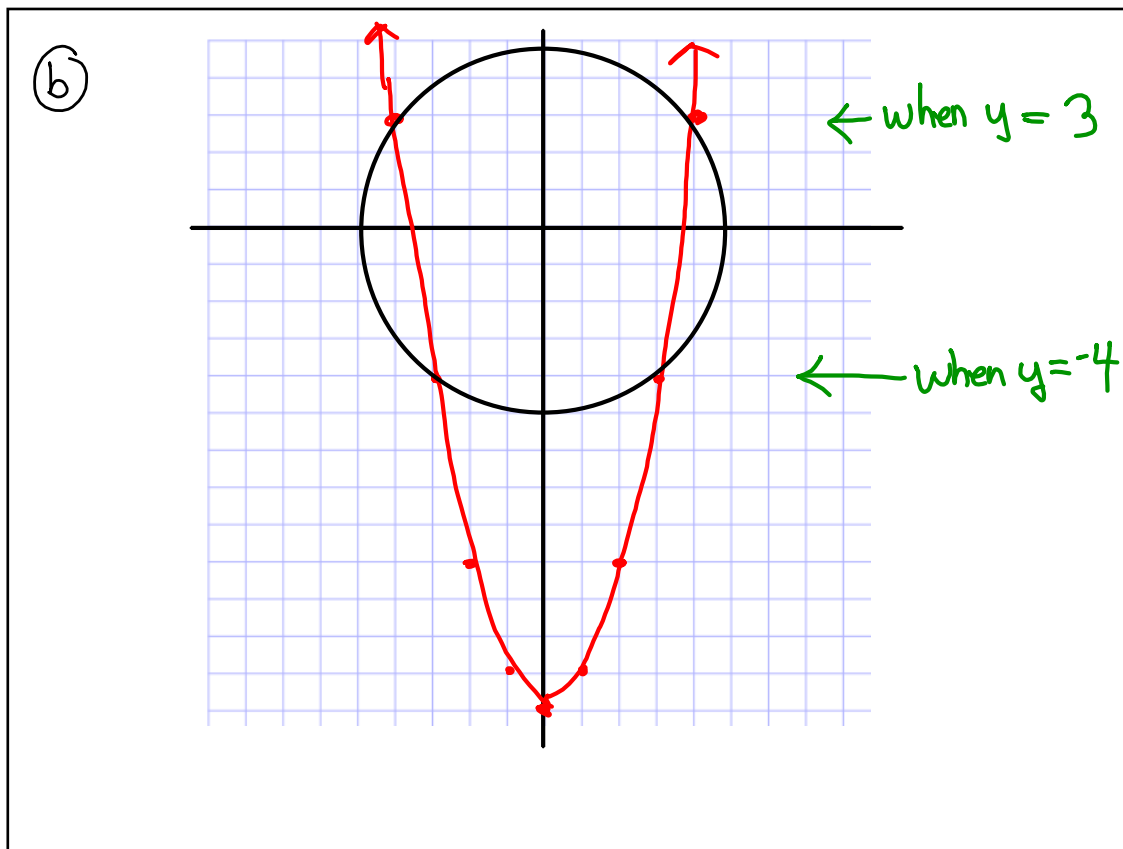
$$4 - 37$$

b a you

c together

(b)





(c) combine to
create new

(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

$$x^2 = y + 13$$

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

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

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

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

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

(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 LCQ

Assignment

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

