1.) Make a chart and a graph of this equation

$y - 3x = 2$

(How do you start to graph this?)

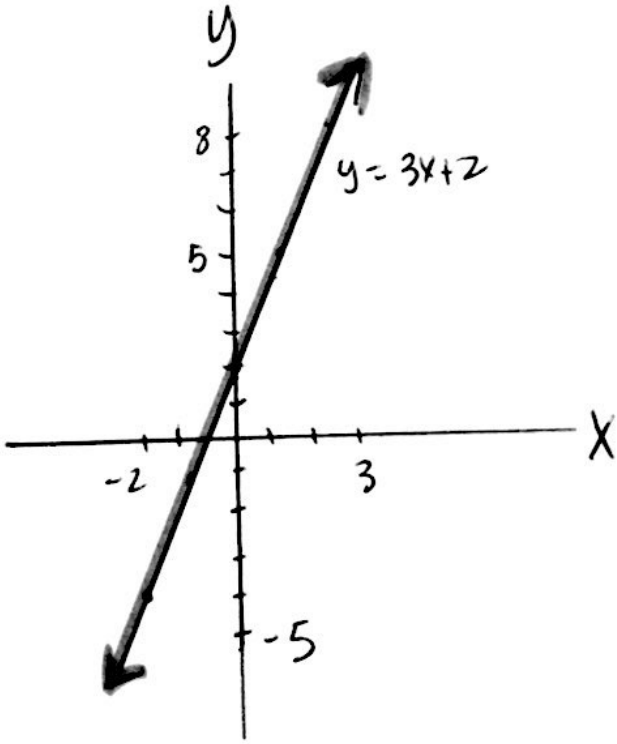
Start by solving for y.

$y - 3x = 2$

$+3x \quad +3x$

$y = 2 + 3x$

x	$y = 2 + 3x$	
-2	$2 + 3(-2) = -4$	(-2, -4)
-1	$2 + 3(-1) = -1$	(-1, -1)
0	$2 + 3(0) = 2$	(0, 2)
1	$2 + 3(1) = 5$	(1, 5)
2	$2 + 3(2) = 8$	(2, 8)



3.)

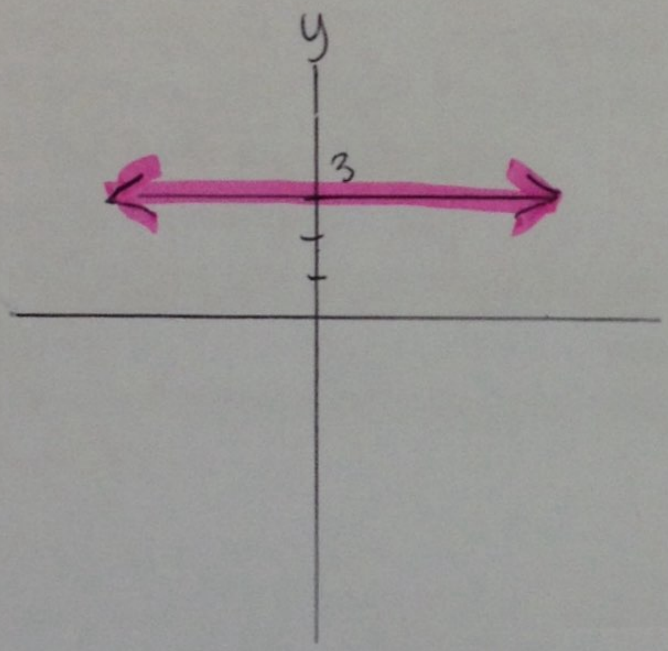
$$y = (x - 2)^2$$

What will the graph of this equation look like?

a.) It will look like a "V" with a corner.
b.) It will look like a "U", a parabola.
c.) It will look like a parabola on its side. It is the top half of a parabola.
d.) It will be a straight line.
e.) It will be a cubic looking like part of a downward facing parabola connected to part of an upward facing parabola.

2.) Graph this equation

$y = 3$ horizontal line at 3 on the y-axis



4.) Does the point (4, -3) satisfy the equation $y = x^2 - 5$?

Show your work.

$x = 4 \quad y = -3$

$-3 \stackrel{?}{=} (4)^2 - 5$

$-3 \stackrel{?}{=} 16 - 5$

$-3 \neq 9$ ← False

No (4, -3) does not satisfy the equation.

5.)

$$y = x - 2$$

What will the graph of this equation look like?

f.) It will look like a "V" with a corner.
g.) It will look like a "U", a parabola.
h.) It will look like a parabola on its side. It is the top half of a parabola.
i.) It will be a straight line.
j.) It will be a cubic looking like part of a downward facing parabola connected to part of an upward facing parabola.

6.) B)

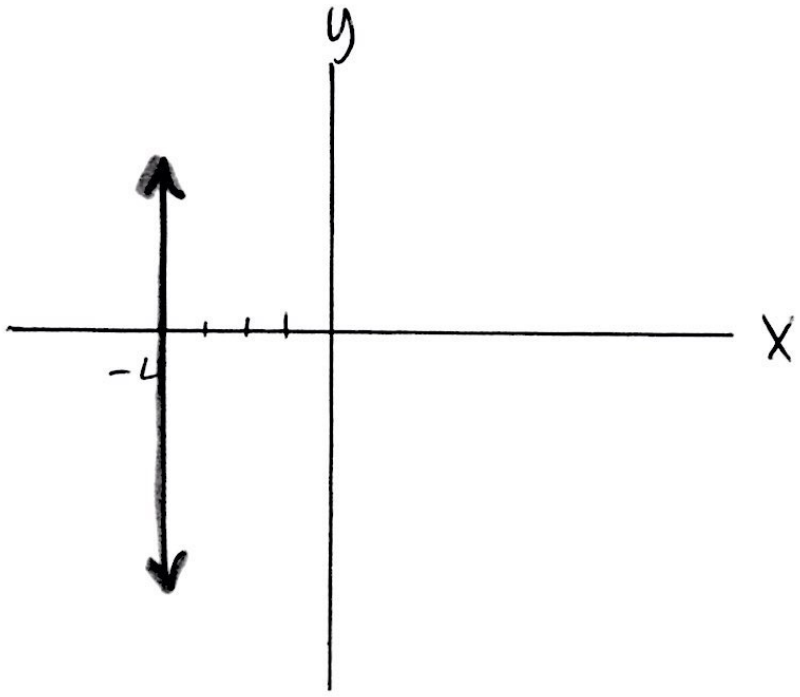
$$y = |x - 2|$$

What will the graph of this equation look like?

k.) It will look like a "V" with a corner.
l.) It will look like a "U", a parabola.
m.) It will look like a parabola on its side. It is the top half of a parabola.
n.) It will be a straight line.
o.) It will be a cubic looking like part of a downward facing parabola connected to part of an upward facing parabola.

6.) Graph the equation x = -4.

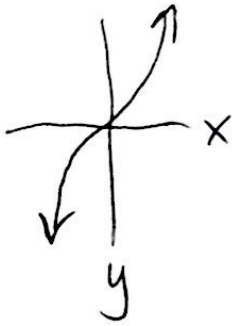
A vertical line that goes through -4 on the x-axis.



7.) $y = x^3$

What will the graph of this equation look like?

p.) It will look like a "V" with a corner.
q.) It will look like a "U", a parabola.
r.) It will look like a parabola on its side. It is the top half of a parabola.
s.) It will be a straight line.
t.) It will be a cubic looking like part of a downward facing parabola connected to part of an upward facing parabola.



8.) $y = \sqrt{x}$

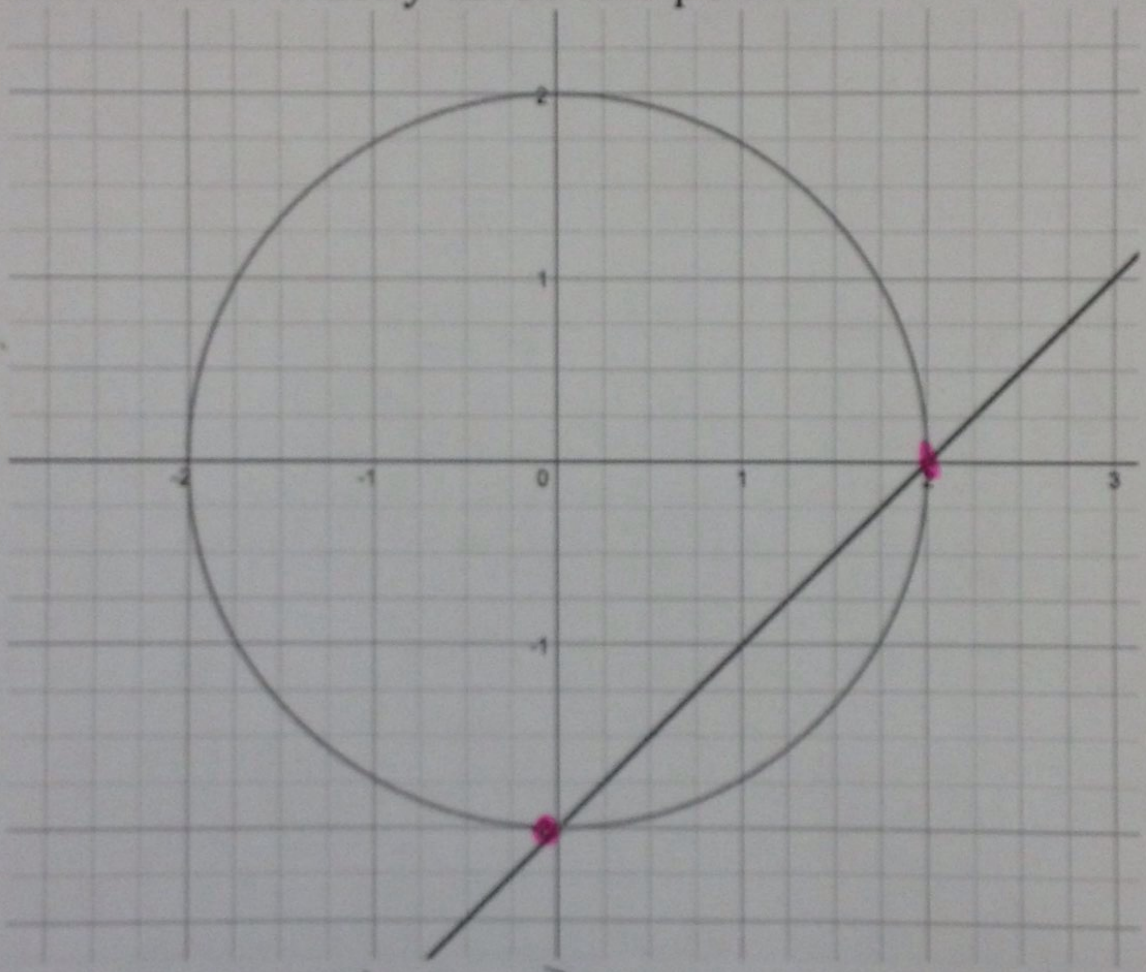
What will the graph of this equation look like?

u.) It will look like a "V" with a corner.
v.) It will look like a "U", a parabola.
w.) It will look like a parabola on its side. It is the top half of a parabola.
x.) It will be a straight line.
y.) It will be a cubic looking like part of a downward facing parabola connected to part of an upward facing parabola.

9.) Where do these two equations intersect?

$x^2 + y^2 = 4$ and $y + 2 = x$

Use the equations to verify that they really do intersect at exactly those two points.



(2,0) and (0,-2)

$(2,0) \rightarrow (2)^2 + 0^2 \stackrel{?}{=} 4$

$4 + 0 = 4$

$4 = 4$

yes

$y + 2 = x$

$0 + 2 = 2$

$2 = 2$

yes

$(0,-2) \rightarrow x^2 + y^2 = 4$

$0^2 + (-2)^2 = 4$

$4 = 4$

yes

$y + 2 = x$

$-2 + 2 = 0$

$0 = 0$

yes

Both points satisfy both equations

10.) Is the point (-1, 3) on the graph of the equation
$y = |x - 2|$?

Show your work.

$x = -1 \quad y = 3$

$3 \stackrel{?}{=} |-1-2|$

$3 \stackrel{?}{=} |-3|$

$3 = 3$ True

Yes, (-1,3) is on the graph of $y = |x-2|$.

11.) The number of defects in a shipment of glass panes is represented by $d = 0.1p$, where d is the number of defect and p is the number of glass panes in the shipment.

a.) If there are 200 glass panes in the shipment, how many defects will there be?

b.) If the number of glass panes triples, how will that affect the number of defects in the shipment?

c.) Is this a direct variation or an inverse variation?

a.) $d = 0.1p$ $p = 200$ $d = 0.1(200)$
$d = 20$
20 defects.

b.) $d = 0.1(600)$ $p = 600$, triple of 200
$d = 60$ The defects also triple.

c.) direct variation
As one variable increases so does the other.

12.) The equation $rt = 1000$ is the equation for how fast a 1000 gallon pool will drain, where r is the rate the water leaves the pool and t is the time it takes.

a.) If the rate is 20 gallons per hour, how long will it take to drain the pool?

b.) If the rate is tripled and the water drains three times as fast, what will happen to the time?

c.) Is this a direct variation or an inverse variation?

a.) $rt = 1000 \quad r = 20 \quad 20t = 1000$

$\frac{}{20} \quad \frac{}{20} \rightarrow t = 50$

b.) $r = 60$ (triple of 20)

$\frac{60t}{60} = \frac{1000}{60} \rightarrow t = \frac{1000}{60} = 16.67$

c.) Inverse variation As r increases, t decreases.