AGS 3        Name: _____ Period: _____ Date: _____

Notes 6.5 – Graphing Circles

Last class we learned $x^2 + y^2 = r^2$ makes a graph of a circle with a radius $r$.

Using Desmos and the notes from last class:

a.    On the graph at right, graph the unit circle.
      Scale the graph so each box is $\frac{1}{2}$.

b.    On the same graph, graph the equation of:

      $(x + 1)^2 + y^2 = 1$

c.    How did the graph change?

      It moved left one

d.    On the same graph, graph the equation of:
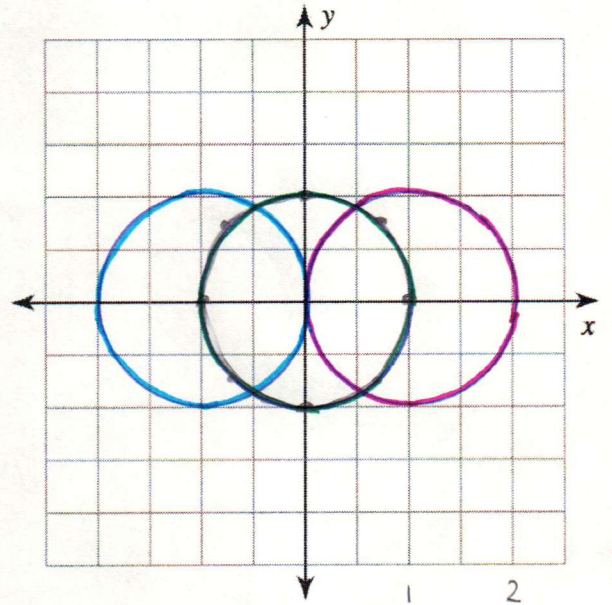
      $(x - 1)^2 + y^2 = 1$

e.    How did the graph change?

      it moved right one

f.    On Desmos, change the values that you are adding and subtracting to/from $x$. What conclusion can you draw about adding or subtracting values to/from $x$ in the equation of a circle.

      • when adding, the graph moves left that amount

      • when subtracting, the graph moves right that amount

g.  On the graph at right, graph the unit circle. Scale the graph so each box is $\frac{1}{2}$.

h.  On the same graph, graph the equation of:

$$x^2 + (y + 1)^2 = 1$$

i.  How did the graph change?

graph moves down

j.  On the same graph, graph the equation of:

$$x^2 + (y - 1)^2 = 1$$

k.  How did the graph change?

graph moves up

l.  On Desmos, change the values that you are adding and subtracting to/from $y$. What conclusion can you draw about adding or subtracting values to/from $y$ in the equation of a circle.

adding - graph moves down
subtracting - graph moves up

m.  What can we find by looking at the left side of the equation?

the center of the circle

n.  Give the equation for a circle with a center at $(3, -2)$ and a radius of 3.

$$(x-3)^2 + (y+2)^2 = 9$$

o.  Give the center and radius for the equation:  $(x + 7)^2 + (y - 4)^2 = 36$

Center: $(-7, 4)$   Radius: 6