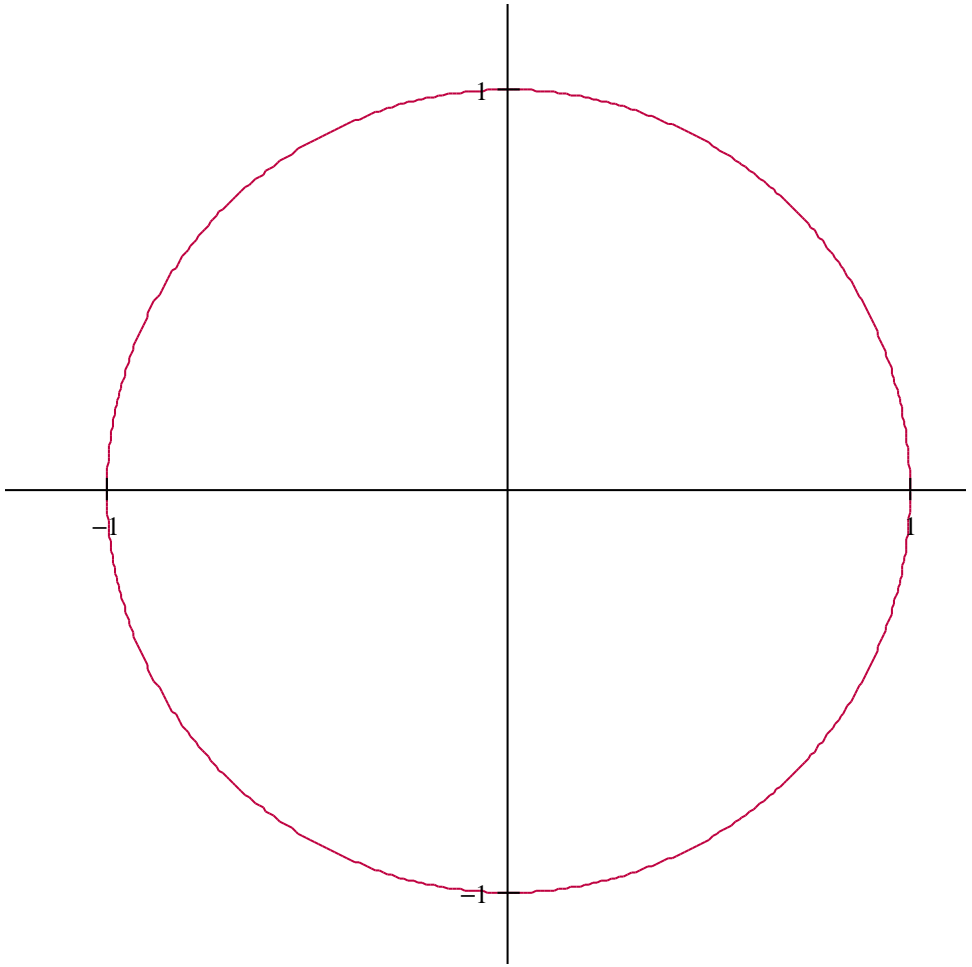
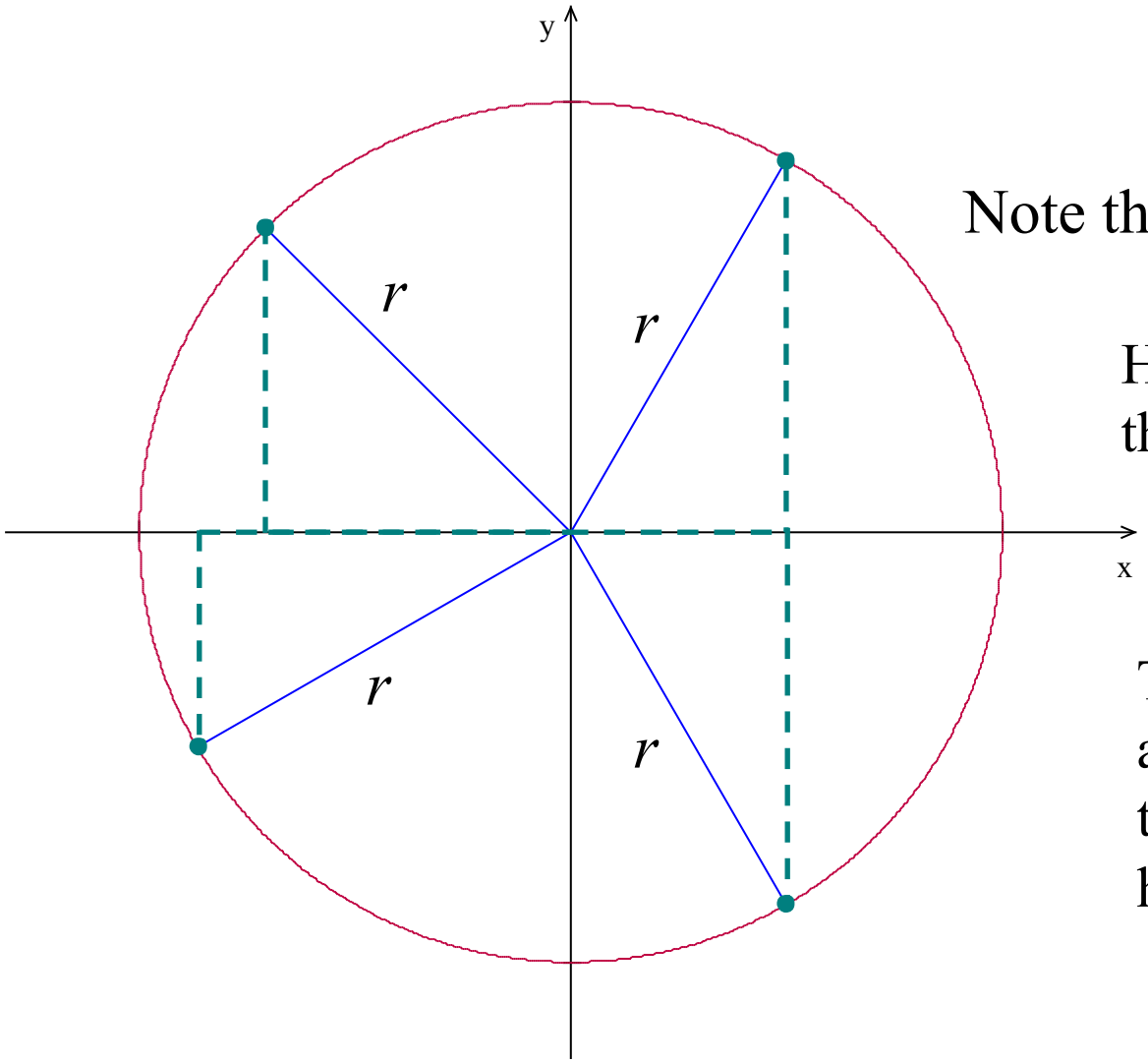
A Circle of radius 1



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

A Circle



$$x^2 + y^2 = r^2$$

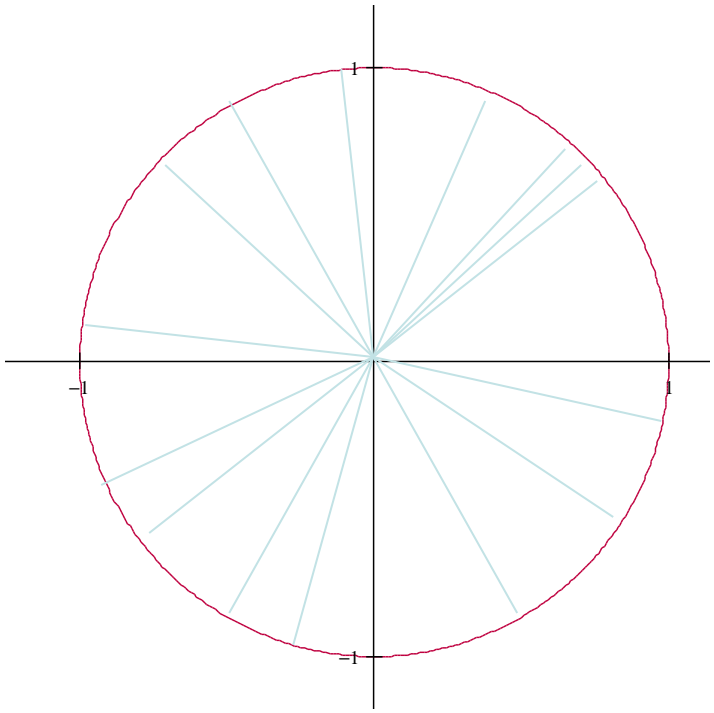
Note the Pythagorean form

How does the Pythagorean theorem apply here?

The x and y coordinates are also side lengths of a right triangle with the radius as the hypotenuse

Regardless of the quadrant in which the points lie

A Circle



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

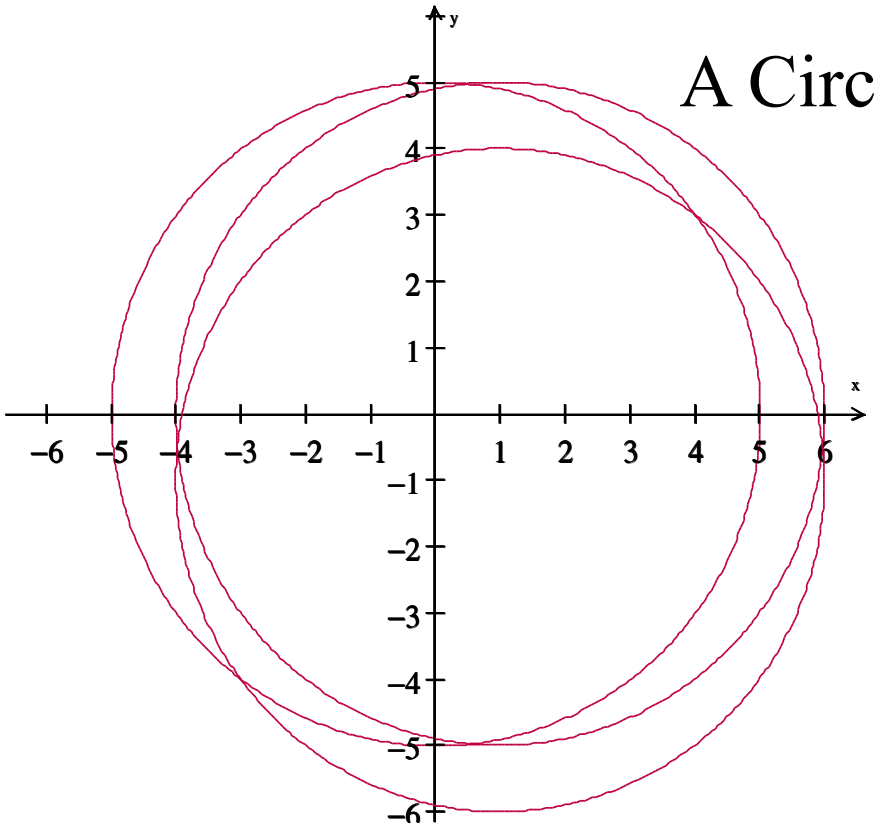
Note the Pythagorean form

Notice also that each point on the circle is equidistant from the center

What if we altered the coefficients of the equation?

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

A Circle



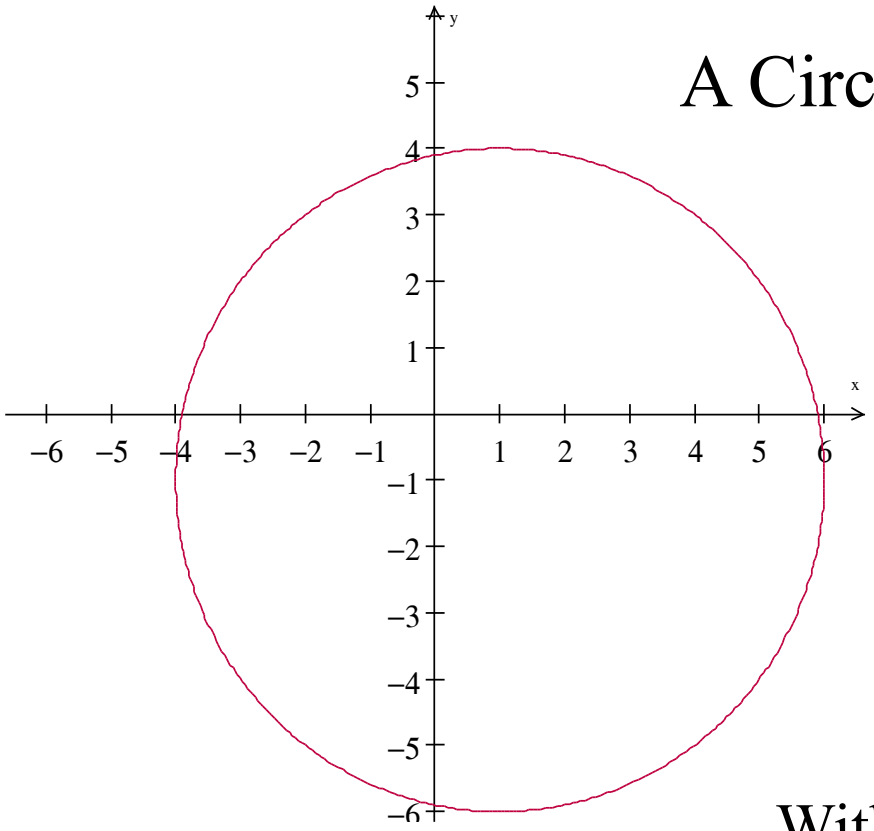
$$x^2 + y^2 = 25$$

So now our radius is 5

Remembering parabolas, what could I do to this equation to move the center 1 to the right?

$$(x-1)^2 + (y+1)^2 = 25$$

How about 1 down?



A Circle

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

So the general equation for a circle is:

$$(x-h)^2 + (y-k)^2 = r^2$$

With center (h, k) and radius r

What if your equation looked like this: $x^2 - 2x + y^2 + 2y - 23 = 0$

Hint: Try completing the squares

$$(x-1)^2 + (y+1)^2 = 25$$ How?

A Circle

So the general equation for a circle is:

$$(x-h)^2+(y-k)^2=r^2$$

With center (h, k) and radius r

What if your equation looked like this: $x^2-2x+y^2+2y-23=0$

$$(x^2-2x+1)+(y^2+2y+1)=23+1+1$$

Add 1 to complete each square

Add the same numbers to the other side

$$(x-1)^2+(y+1)^2=25$$