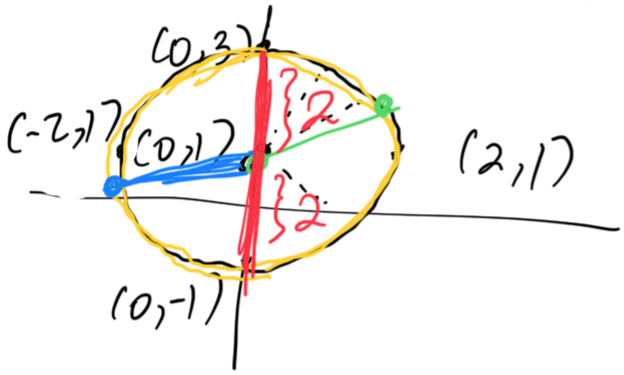
The Equation of a Circle

A circle is the set of points a given distance from a given point

↑ center of the circle.

Ex: The set of points 2 units away from (0, 1) ← center



diameter is 4

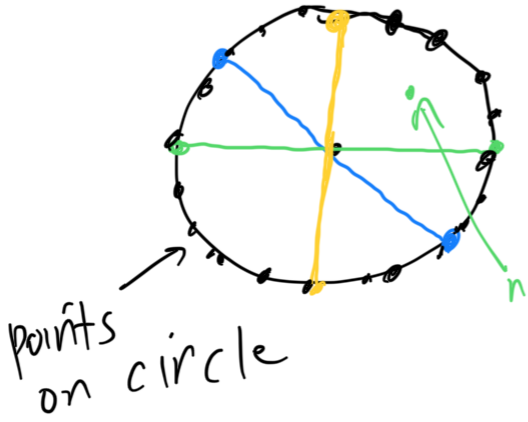
A radius of a circle is any segment ~~AB~~ with the center and a point on the circle as endpoints

(Radius can also mean the length of such a segment)

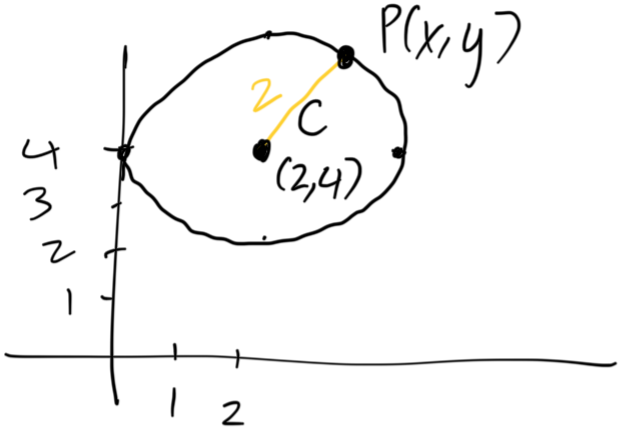
A diameter of a circle is any segment that passes through the

... passes through the center.

and whose endpoints are points of the circle. (Diameter could also mean the length of such a segment)



Ex: Find an equation of the circle with center C(2,4) and radius 2.



Suppose P(x,y) is any point on the circle.

Apply Distance Formula:

$$PC = \sqrt{(x-2)^2 + (y-4)^2}$$

PC is the radius, so PC = 2

$$\sqrt{(x-2)^2 + (y-4)^2} = 2$$

$$(x-2)^2 + (y-4)^2 = 4$$

more standard

In general, an eq'n of the circle with radius r and center (h, k) is

$$\boxed{(x-h)^2 + (y-k)^2 = r^2}$$