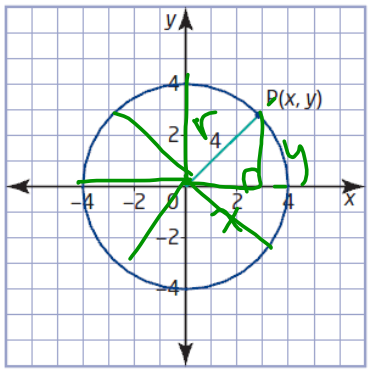
Equation of a Circle

a circle is a set of all points in a plane the same distance from a fixed point (origin)



$$r = \sqrt{x^2 + y^2}$$

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

$r^2 = Run^2 + Rise^2$

ex 1) Write an equation with origin and radius 5

(0, 0)

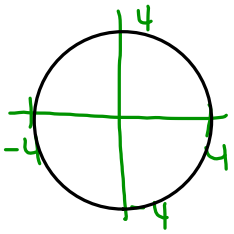
$r^2 = x^2 + y^2$

$5^2 = x^2 + y^2$

$25 = x^2 + y^2$

ex 2: Draw a circle with the following equation ($x^2+y^2=r^2$)

$x^2+y^2=16$



$r=\sqrt{16}$

$r=4$

(3) What is the eq^n of the circle with a diameter of 200

$d=200$

$d=2r$

$\frac{200}{2}=\frac{2r}{2}$

$100=r$

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

$x^2+y^2=100^2$

$x^2+y^2=10000$

(ex 4) circle passes through the origin and the pt $(8,-6)$ find the equation?

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

$8^2+(-6)^2=r^2$

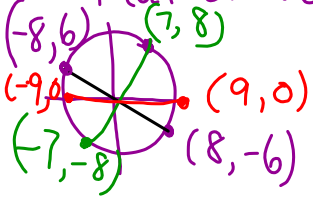
$64+36=r^2$

$\sqrt{100}=\sqrt{r^2}$

$10=\text{radius}$

$x^2+y^2=100$

b) What would the coordinates of endpoint of the diameter that started at $(8,-6)$



ex 4)
a stone is dropped into a pond and sends ripples out whose radius increases by 5 cm/s. What is the equation of the circle after 12 s?

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

$r = 12 \times 5\text{ cm}$

$r = 60$

$x^2 + y^2 = 60^2$

$x^2 + y^2 = 3600$

p91 #1
2ac
3ab
5
6
12
13