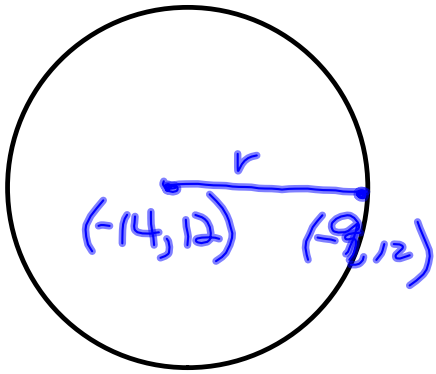
$$(x-h)^2+(y-k)^2=r^2$$

1) center $(-14, 12)$
point on circle $(-9, 12)$



$$d=\sqrt{(-14+(-9))^2+(12-12)^2}$$

$$d=\sqrt{(-5)^2}$$

$$d=5=\text{radius}$$

$$(x+14)^2+(y-12)^2=25$$

2) ctr $(15,-8)$
Pt $(17,-5)$

$$d=\sqrt{(15-17)^2+(-8+(5))^2}$$

$$d=\sqrt{(-2)^2+(-3)^2}$$

$$d=\sqrt{4+9}$$

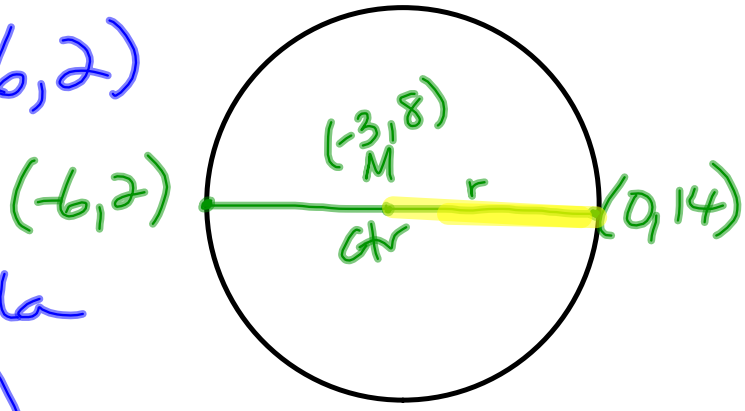
$$d=\sqrt{13}$$

$$(x-15)^2+(y+8)^2=(\sqrt{13})^2$$

$$(x-15)^2+(y+8)^2=13$$

7) endpoints of a diameter

(0, 14) (-6, 2)



center
use midpt formula

$M = \left(\frac{-6+0}{2}, \frac{2+14}{2}\right)$ (16)

$M = (-3, 8)$

radius use distance from Midpt to end point

M(-3, 8) (0, 14)

$d = \sqrt{(-3-0)^2+(8-14)^2}$

$d = \sqrt{(3^2)+(-6)^2}$

$d = \sqrt{9+36}$

$d = \sqrt{45} = r$

M = Ctr (-3, 8)

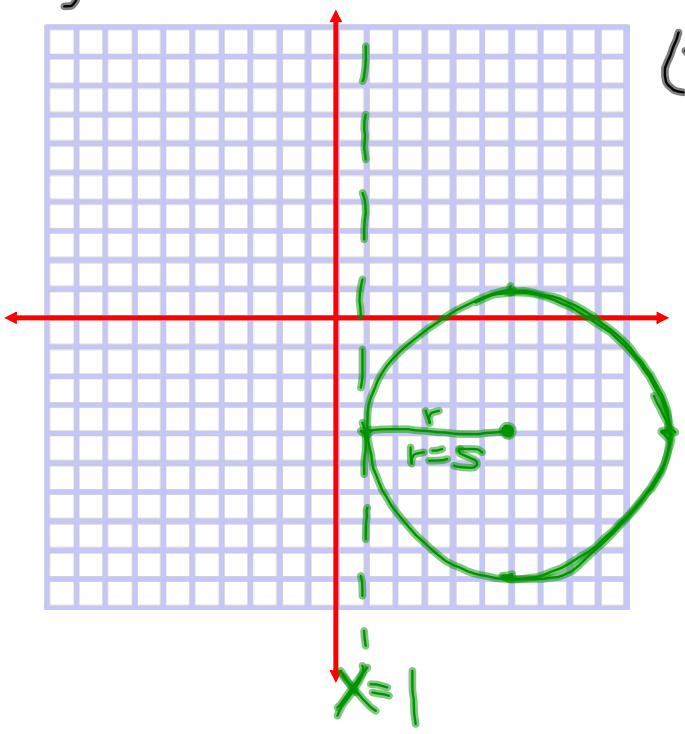
$r = \sqrt{45}$

$(x+3)^2+(y-8)^2 = 45$

13) Ctr $(6, -4)$

tangent to $x=1 \Rightarrow$ radius is 5 units

$(x-6)^2+(y+4)^2=25$



15) ctr (-3,2) tangent to $y=6$

$r=4$

$(x+3)^2+(y-2)^2=16$