

$$\begin{aligned}
 x &= r \cos A \\
 y &= r \sin A \\
 \cos A &= \frac{x}{r} \\
 \sin A &= \frac{y}{r} \\
 \tan A &= \frac{y}{x} \\
 r^2 &= x^2 + y^2 \\
 r &= \sqrt{x^2 + y^2}
 \end{aligned}$$

1. $r = 5$

$$\sqrt{x^2 + y^2} = 5$$

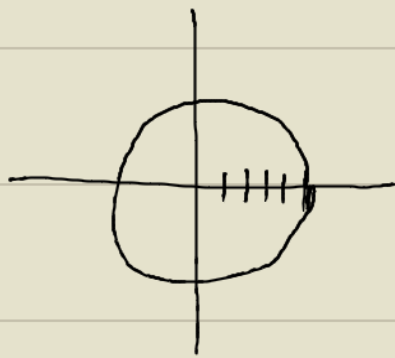
$$(\sqrt{x^2 + y^2})^2 = 5^2$$

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

CIRCLE

$$r = \sqrt{25}$$

$$r = 5$$

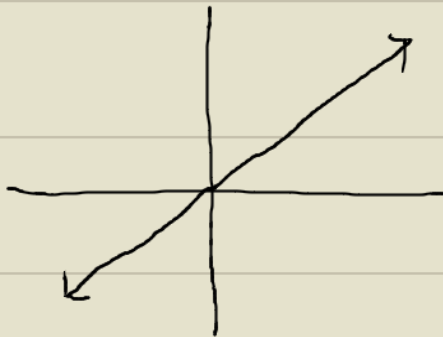


2. $A = \frac{\pi}{4}$

$$\tan A = \tan \frac{\pi}{4}$$

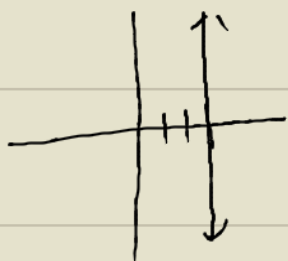
$$\frac{y}{x} = 1$$

$$y = x$$



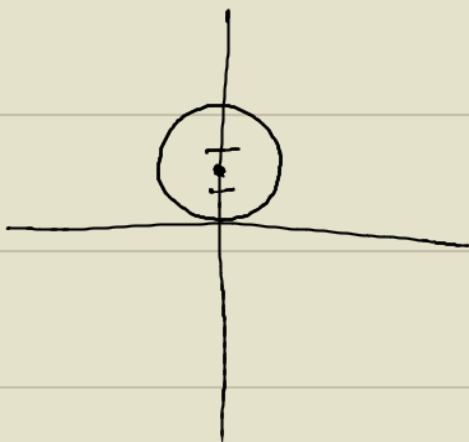
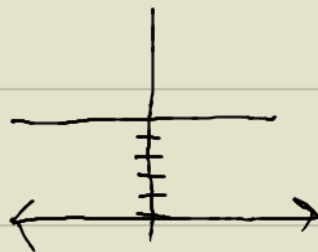
3. $r \cos A = 3$

$$x = 3$$



4. $r \sin A = -5$

$$y = -5$$



5. $r = 3 \sin A$

$$r(r) = r(3 \sin A)$$

$$r^2 = 3r \sin A$$

$$x^2 + y^2 = 3y$$

$$x^2 + y^2 - 3y = 0$$

$$x^2 + y^2 - 3y + \frac{9}{4} = 0 + \frac{9}{4}$$

$$\left(-3 \cdot \frac{1}{2}\right)^2$$

$$\left(\frac{-3}{2}\right)^2$$

$$\frac{9}{4}$$

$$(x-0)^2 + (y-\frac{3}{2})^2 = \frac{9}{4}$$

$$h = 0$$

$$k = \frac{3}{2}$$

$$r = \sqrt{\frac{9}{4}}$$

$$r = \frac{3}{2}$$

Center: $(h, k) = (0, \frac{3}{2})$