Parametric equations of circle of radius r centered at $C = (x_0, y_0)$ (different equations are also possible):

$$x = x_0 + r\cos t$$
$$y = y_0 + r\sin t$$

Implicit equation:

$$(x - x_0)^2 + (y - y_0)^2 = r^2$$

.

Uniform Circular motion:

- Period T: time it takes to complete a revolution.
- Angular velocity ω and linear velocity (speed) v.

  $$v = \omega\, r$$

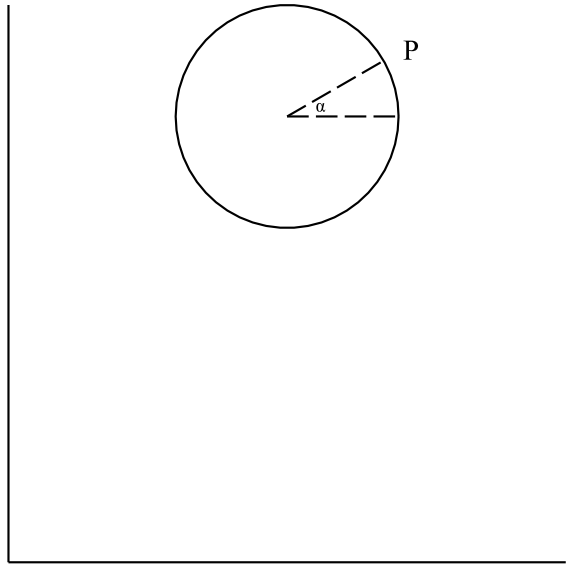
  where r is the radius of the circle.
- $\theta = \omega t$ where θ is the angle swept in time t.
- $\omega = \frac{2\pi}{T}$, $T = \frac{2\pi}{\omega}$

The parametric equations

$$x = x_0 + r\cos(\omega t + \alpha)$$
$$y = y_0 + r\sin(\omega t + \alpha)$$

give the position of an object moving counterclockwise along circle of radius r centered at $C = (x_0, y_0)$ starting at position P

α is the angle the radius OP forms with the horizontal.



Parametric equations of ellipse (different equations are also possible):

$$x = x_0 + r_1 \cos t$$
$$y = y_0 + r_2 \sin t$$