

Centripetal Acceleration

by Boyang Zhao

Centripetal acceleration is the acceleration directed inward towards the center of a circularly moving object at a constant tangential speed (the magnitude of tangential velocity). The centripetal acceleration (a_c) is given by the follow formula:

$$a_c = \frac{v_T^2}{r}$$

where a_c is the centripetal acceleration, v_T is the tangential speed, and r is the radius of the circular path.

Centripetal acceleration can also be expressed in another form (with angular speed - the magnitude of angular velocity). The equation is shown below:

$$a_c = r\omega^2$$

Note: the angular speed must be measured in rad/s. Other units will not work for this equation.