

## Equations of Kinematics

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**For Linear Motion**

Image

Equations of linear kinematics for constant linear acceleration can be used to solve physics problems. Five variables are concerned:  $x$  (displacement),  $a$  (acceleration),  $v$  (final velocity),  $v_0$  (initial velocity), and  $t$  (time). When three of these variables are given, one of the equations (shown right) can be used to solve a needed variable:

**For Rotational Motion**

Image

Similarly, equations of rotational kinematics for constant angular acceleration are useful in solving rotational motion problems. The variables needed for the equations include  $\theta$  (angular displacement),  $\alpha$  (angular acceleration),  $\omega$  (final angular velocity),  $\omega_0$  (initial angular velocity), and  $t$  (time). When three of these variables are given, one of the equations shown below can be used to solve a needed variable: