Equations of Linear Motion and Rotational Motion.

Linear Motion	Rotational Motion
If linear acceleration is 0, u = constant and s = u t.	If angular acceleration is 0, ω = constant and $\theta = \omega t$
If linear acceleration a = constant, (i) $s = \frac{(u+v)}{2}t$ (ii) $a = \frac{v-u}{t}$ (iii) $v = u + at$ (iv) $s = ut + \frac{1}{2}at^2$ (v) $v^2 = u^2 + 2as$ (vi) $s_{nth} = u + \frac{1}{2}a(2n-1)$	If angular acceleration α = constant then (i) $\theta = \frac{(\omega_1 + \omega_2)}{2}t$ (ii) $\alpha = \frac{\omega_2 - \omega_1}{t}$ (iii) $\omega_2 = \omega_1 + \alpha t$ (iv) $\theta = \omega_1 t + \frac{1}{2}\alpha t^2$ (v) $\omega_2^2 = \omega_1^2 + 2\alpha\theta$ (vi) $\theta_{nth} = \omega_1 + (2n-1)\frac{\alpha}{2}$
If acceleration is not constant, the above equation will not be applicable. In this case (i) $v = \frac{dx}{dt}$ (ii) $a = \frac{dv}{dt} = \frac{d^2x}{dt^2}$ (iii) $vdv = a\,ds$	If acceleration is not constant, the above equation will not be applicable. In this case (i) $\omega = \frac{d\theta}{dt}$ (ii) $\alpha = \frac{d\omega}{dt} = \frac{d^2\theta}{dt^2}$ (iii) $\omega d\omega = \alpha\, d\theta$