

Equation List

Italicized characters indicate vectors in the equations below.

$$v_{Average} = \Delta s / \Delta t$$

$$\omega_{Average} = \Delta \theta / \Delta t$$

$$a_{Average} = \Delta v / \Delta t$$

$$\alpha_{Average} = \Delta \omega / \Delta t$$

$$v = ds / dt$$

$$\omega = d\theta / dt$$

$$a = dv / dt$$

$$\alpha = d\omega / dt$$

$$\Sigma F = ma$$

$$\Sigma T = I\alpha$$

$$s = s_0 + v_0 t + 1/2 a t^2$$

$$\theta = \theta_0 + \omega_0 t + 1/2 \alpha t^2$$

$$v = v_0 + at$$

$$\omega = \omega_0 + \alpha t$$

$$v^2 = v_0^2 + 2a\Delta s$$

$$\omega^2 = \omega_0^2 + 2\alpha\Delta\theta$$

$$\int \Sigma F(t) dt = \Delta p = \Delta m v$$

$$\int \Sigma T(t) dt = \Delta H = \Delta I \omega$$

$$\Sigma F_{AVERAGE} \times \Delta t = \Delta p = \Delta m v$$

$$\Sigma T_{AVERAGE} \times \Delta t = \Delta H = \Delta I \omega$$

$$I = \sum_{i=1}^n m_i r_i^2$$

$$v = \omega \times r$$

$$a_{cent} = \omega \times (\omega \times r)$$

$$a_{tang} = \alpha \times r$$

Bold characters indicate vectors in the equations below.

$$\mathbf{H}_G = \sum_{i=1}^{14} \mathbf{H}_i = \sum_{i=1}^{14} (\mathbf{H}_{local(i)} + \mathbf{H}_{transfer(i)})$$

$$\mathbf{H}_{local} = I_{seg} \omega_{seg}$$

$$\mathbf{H}_{transfer} = \mathbf{r}_{seg/G} \times (m_{seg} \mathbf{v}_{seg/G})$$

$$|\mathbf{A}| = \sqrt{(A_x)^2 + (A_y)^2 + (A_z)^2}$$

Constants

$$\mathbf{g} = -9.81 \text{ m/s}^2$$

$$1 \text{ radian} = 57.3 \text{ degrees}$$