$$G = 6.67 \times 10^{-11}\ N \cdot m^2/kg^2$$
$$g = 9.8 m/s^2$$
$$c = 3.00 \times 10^8 m/s$$
$$N_\mathrm{A} = 6.02 \times 10^{23}\ \mathrm{mol}^{-1}$$
$$m_\mathrm{e} = 9.11 \times 10^{-31}\ kg$$
$$m_\mathrm{p} = 1.67 \times 10^{-27}\ kg$$
$$1\ \mathrm{m} = 3.28\ \mathrm{ft}$$
$$1\ \mathrm{lb} = 4.45\ N$$
$$\frac{d}{dx}x = 1$$
$$\frac{d}{dx}(au) = a\frac{du}{dx}$$
$$\frac{d}{dx}(u+v) = \frac{du}{dx} + \frac{dv}{dx}$$
$$\frac{d}{dx}x^m = mx^{m-1}$$
$$\frac{d}{dx}(uv) = u\frac{dv}{dx} + v\frac{du}{dx}$$
$$\int dx = x$$
$$\int au\ dx = a\int u\ dx$$
$$\int (u+v)\,dx = \int u\ dx + \int v\ dx$$
$$\int x^m\ dx = \frac{x^{m+1}}{m+1} \quad (m \neq -1)$$
$$\Delta x = x_2 - x_1$$
$$\bar{v} = \frac{\Delta x}{\Delta t} = \frac{x_2 - x_1}{t_2 - t_1}$$
$$\bar{s} = \frac{\text{total distance}}{\Delta t}$$
$$v = \frac{dx}{dt}$$
$$\bar{a} = \frac{\Delta v}{\Delta t} = \frac{v_2 - v_1}{t_2 - t_1}$$
$$a = \frac{dv}{dt}$$
$$v = v_0 + at$$
$$x - x_0 = v_0 t + \frac{1}{2}at^2$$
$$v^2 = v_0^2 + 2a(x - x_0)$$
$$x - x_0 = \frac{1}{2}(v_0 + v)\,t$$
$$x - x_0 = vt - \frac{1}{2}at^2$$
$$a_x = a\cos\theta$$
$$a_y = a\sin\theta$$
$$a = \sqrt{a_x^2 + a_y^2}$$
$$\tan\theta = \frac{a_y}{a_x}$$
$$\vec{a}\cdot\vec{b} = ab\cos\phi$$
$$c = ab\sin\phi$$
$$\vec{v} = \frac{d\vec{r}}{dt}$$
$$\vec{a} = \frac{d\vec{v}}{dt}$$
$$x - x_0 = v_{0x}t$$
$$y - y_0 = v_{0y}t - \frac{1}{2}gt^2$$
$$y = (\tan\theta_0)\,x - \frac{gx^2}{2\,(v_0\cos\theta_0)^2}$$
$$R = \frac{v_0^2}{g}\sin(2\theta_0)$$
$$a = \frac{v^2}{r}$$
$$T = \frac{2\pi r}{v}$$
$$\Sigma\vec{F} = m\vec{a}$$
$$W = mg$$
$$\vec{F}_\mathrm{AB} = -\vec{F}_\mathrm{BA}$$
$$f_s = \mu_s N$$
$$f_k = \mu_k N$$
$$F = \frac{mv^2}{r}$$
$$K = \frac{1}{2}mv^2$$
$$\Delta K = K_f - K_i = W$$
$$W = Fd\cos\phi$$
$$W = \vec{F}\cdot\vec{d}$$
$$W_g = mgd\cos\phi$$
$$\Delta K = W_a + W_g$$
$$W = \int_{x_i}^{x_f} F(x)\ dx$$
$$F = -kx$$
$$W_s = -\frac{1}{2}kx^2$$
$$\bar{P} = \frac{W}{\Delta t}$$
$$P = \frac{dW}{dt}$$
$$P = \vec{F}\cdot\vec{v}$$
$$U = mgy$$
$$U(x) = \frac{1}{2}kx^2$$
$$E = K + U$$
$$F(x) = -\frac{dU(x)}{dx}$$
$$W_\mathrm{app} = \Delta E$$
$$\Delta E = -f_k d$$
$$P = \frac{dE}{dt}$$
$$x_\mathrm{com} = \frac{1}{M}\Sigma_{i=1}^{n} m_i x_i$$
$$\vec{r}_\mathrm{com} = \frac{1}{M}\Sigma_{i=1}^{n} m_i \vec{r}_i$$
$$x_\mathrm{com} = \frac{1}{M}\int x\ dm$$
$$x_\mathrm{com} = \frac{1}{V}\int x\ dV$$
$$\Sigma\vec{F}_\mathrm{ext} = M\vec{a}_\mathrm{cm}$$
$$\vec{p} = m\vec{v}$$
$$\Sigma\vec{F} = \frac{d\vec{p}}{dt}$$
$$\vec{P} = M\vec{v}_\mathrm{cm}$$
$$\Sigma\vec{F}_\mathrm{ext} = \frac{d\vec{P}}{dt}$$
$$\vec{P} = \text{constant}$$
$$\vec{J} = \int_{t_i}^{t_f} \vec{F}(t)\ dt$$
$$\vec{p}_f - \vec{p}_i = \Delta\vec{p} = \vec{J}$$
$$v_{1f} = \frac{m_1 - m_2}{m_1 + m_2}v_{1i}$$

$$
\begin{aligned}
v_{2f} &= \frac{2m_1}{m_1+m_2}v_{1i} \\
v_{cm} &= \frac{P}{m_1+m_2} \\
\theta &= \tfrac{s}{r} \\
\Delta\theta &= \theta_2-\theta_1 \\
\omega &= \frac{d\theta}{dt} \\
\alpha &= \frac{d\omega}{dt} \\
\omega &= \omega_0+\alpha t \\
\theta-\theta_0 &= \omega_0 t+\frac{1}{2}\alpha t^2 \\
\omega^2 &= \omega_0^2+2\alpha\left(\theta-\theta_0\right) \\
\theta-\theta_0 &= \frac{1}{2}\left(\omega_0+\omega\right)t \\
\theta-\theta_0 &= \omega t-\frac{1}{2}\alpha t^2 \\
s &= \theta r \\
v &= \omega r \\
a_t &= \alpha r \\
a_r &= \frac{v^2}{r}=\omega^2 r \\
I &= \Sigma m_i r_i^2 \\
I &= \int r^2 dm \\
K &= \frac{1}{2}I\omega^2 \\
\tau &= rF\sin\phi \\
\tau &= I\alpha \\
\Sigma\tau &= I\alpha \\
v_{cm} &= \omega R \\
K &= \frac{1}{2}I_{cm}\omega^2+\frac{1}{2}Mv_{cm}^2 \\
\vec{\tau} &= \vec{r}\times\vec{F} \\
\vec{l} &= \vec{r}\times\vec{p}=m\left(\vec{r}\times\vec{v}\right) \\
\Sigma\vec{\tau} &= \frac{d\vec{l}}{dt} \\
L &= I\omega \\
F &= G\frac{m_1m_2}{r^2} \\
U &= -G\frac{m_1m_2}{r} \\
v &= \sqrt{\frac{2GM}{R}} \\
\rho &= \frac{\Delta m}{\Delta V} \\
p &= \frac{\Delta F}{\Delta A} \\
p_2 &= p_1+\rho g\left(y_1-y_2\right) \\
p &= p_0+\rho gh \\
R &= Av \\
p_1+\frac{1}{2}\rho v_1^2+\rho g y_1 &= p_2+\frac{1}{2}\rho v_2^2+\rho g y_2 \\
p+\frac{1}{2}\rho v^2+\rho g y &= \text{a constant}
\end{aligned}
$$