$$
\begin{aligned}
G &= 6.67\times10^{-11}\ N\cdot m^2/kg^2\\
g &= 9.8m/s^2\\
c &= 3.00\times10^8 m/s\\
\rho_{\text{ice}} &= 0.92\times10^3 kg/m^3\\
\rho_{\text{water}} &= 1.00\times10^3 kg/m^3\\
\rho_{\text{blood}} &= 1.06\times10^3 kg/m^3\\
\rho_{\text{lead}} &= 11.3\times10^3 kg/m^3\\
N_{\text{A}} &= 6.02\times10^{23}\ \text{mol}^{-1}\\
m_{\text{e}} &= 9.11\times10^{-31}\ kg\\
m_{\text{p}} &= 1.67\times10^{-27}\ kg\\
1\ \text{m} &= 3.28\ \text{ft}\\
1\ \text{mi} &= 5280\ \text{ft}\\
1\ \text{lb} &= 4.45\ N\\
\frac{d}{dx}x &= 1\\
\frac{d}{dx}(au) &= a\frac{du}{dx}\\
\frac{d}{dx}(u+v) &= \frac{du}{dx}+\frac{dv}{dx}\\
\frac{d}{dx}x^m &= mx^{m-1}\\
\frac{d}{dx}(uv) &= u\frac{dv}{dx}+v\frac{du}{dx}\\
\int dx &= x\\
\int au\ dx &= a\int u\ dx\\
\int (u+v)\,dx &= \int u\ dx+\int v\ dx\\
\int x^m\ dx &= \frac{x^{m+1}}{m+1}\quad (m\neq -1)\\
\Delta x &= x_2-x_1\\
\bar{v} &= \frac{\Delta x}{\Delta t}=\frac{x_2-x_1}{t_2-t_1}\\
\bar{s} &= \frac{\text{total distance}}{\Delta t}\\
v &= \frac{dx}{dt}\\
\bar{a} &= \frac{\Delta v}{\Delta t}=\frac{v_2-v_1}{t_2-t_1}\\
a &= \frac{dv}{dt}\\
v &= v_0+at\\
x-x_0 &= v_0t+\frac{1}{2}at^2
\end{aligned}
$$

$$
\begin{aligned}
v^2 &= v_0^2+2a\,(x-x_0)\\
x-x_0 &= \frac{1}{2}(v_0+v)\,t\\
x-x_0 &= vt-\frac{1}{2}at^2\\
a_x &= a\cos\theta\\
a_y &= a\sin\theta\\
a &= \sqrt{a_x^2+a_y^2}\\
\tan\theta &= \frac{a_y}{a_x}\\
\vec{a}\cdot\vec{b} &= ab\cos\phi\\
\vec{a}\cdot\vec{b} &= A_xB_x+A_yB_y+A_zB_z\\
\vec{a}\times\vec{b} &= \vec{c}\\
c &= ab\sin\phi\\
\vec{v} &= \frac{d\vec{r}}{dt}\\
\vec{a} &= \frac{d\vec{v}}{dt}\\
x-x_0 &= v_{0x}t\\
y-y_0 &= v_{0y}t-\frac{1}{2}gt^2\\
y &= (\tan\theta_0)\,x-\frac{gx^2}{2\,(v_0\cos\theta_0)^2}\\
R &= \frac{v_0^2}{g}\sin(2\theta_0)\\
a &= \frac{v^2}{r}\\
T &= \frac{2\pi r}{v}\\
\Sigma\vec{F} &= m\vec{a}\\
W &= mg\\
\vec{F}_{\text{AB}} &= -\vec{F}_{\text{BA}}\\
f_s &= \mu_s N\\
f_k &= \mu_k N\\
F &= \frac{mv^2}{r}\\
K &= \frac{1}{2}mv^2\\
\Delta K &= K_f-K_i=W\\
W &= Fd\cos\phi\\
W &= \vec{F}\cdot\vec{d}\\
W_g &= mgd\cos\phi\\
\Delta K &= W_a+W_g\\
W &= \int_{x_i}^{x_f}F(x)\ dx\\
F &= -kx
\end{aligned}
$$

$$W_s = -\frac{1}{2}kx^2$$
$$\bar{P} = \frac{W}{\Delta t}$$
$$P = \frac{dW}{dt}$$
$$P = \vec{F} \cdot \vec{v}$$
$$U = mgy$$
$$U(x) = \frac{1}{2}kx^2$$
$$E = K + U$$
$$F(x) = -\frac{dU(x)}{dx}$$
$$W_{\text{app}} = \Delta E$$
$$\Delta E = -f_k d$$
$$P = \frac{dE}{dt}$$
$$x_{\text{com}} = \frac{1}{M}\Sigma_{i=1}^{n} m_i x_i$$
$$\vec{r}_{\text{com}} = \frac{1}{M}\Sigma_{i=1}^{n} m_i \vec{r}_i$$
$$x_{\text{com}} = \frac{1}{M}\int x \; dm$$
$$x_{\text{com}} = \frac{1}{V}\int x \; dV$$
$$\Sigma \vec{F}_{\text{ext}} = M\vec{a}_{\text{cm}}$$
$$\vec{p} = m\vec{v}$$
$$\Sigma \vec{F} = \frac{d\vec{p}}{dt}$$
$$\vec{P} = M\vec{v}_{\text{cm}}$$
$$\Sigma \vec{F}_{\text{ext}} = \frac{d\vec{P}}{dt}$$
$$\vec{P} = \text{constant}$$
$$\vec{J} = \int_{t_i}^{t_f} \vec{F}(t) \; dt$$
$$\vec{p}_f - \vec{p}_i = \Delta\vec{p} = \vec{J}$$
$$v_{1f} = \frac{m_1 - m_2}{m_1 + m_2} v_{1i}$$
$$v_{2f} = \frac{2m_1}{m_1 + m_2} v_{1i}$$
$$v_{cm} = \frac{P}{m_1 + m_2}$$
$$\theta = \tfrac{s}{r}$$
$$\Delta\theta = \theta_2 - \theta_1$$
$$\omega = \frac{d\theta}{dt}$$
$$\alpha = \frac{d\omega}{dt}$$
$$\omega = \omega_0 + \alpha t$$
$$\theta - \theta_0 = \omega_0 t + \frac{1}{2}\alpha t^2$$
$$\omega^2 = \omega_0^2 + 2\alpha\left(\theta - \theta_0\right)$$
$$\theta - \theta_0 = \frac{1}{2}\left(\omega_0 + \omega\right) t$$
$$\theta - \theta_0 = \omega t - \frac{1}{2}\alpha t^2$$
$$s = \theta r$$
$$v = \omega r$$
$$a_t = \alpha r$$
$$a_r = \frac{v^2}{r} = \omega^2 r$$
$$I = \Sigma m_i r_i^2$$
$$I = \int r^2 dm$$
$$K = \frac{1}{2}I\omega^2$$
$$\tau = rF\sin\phi$$
$$\tau = I\alpha$$
$$\Sigma\tau = I\alpha$$
$$v_{cm} = \omega R$$
$$K = \frac{1}{2}I_{cm}\omega^2 + \frac{1}{2}Mv_{cm}^2$$
$$\vec{\tau} = \vec{r} \times \vec{F}$$
$$\vec{l} = \vec{r} \times \vec{p} = m\left(\vec{r} \times \vec{v}\right)$$
$$\Sigma\vec{\tau} = \frac{d\vec{l}}{dt}$$
$$L = I\omega$$
$$F = G\frac{m_1 m_2}{r^2}$$
$$U = -G\frac{m_1 m_2}{r}$$
$$v = \sqrt{\frac{2GM}{R}}$$
$$T = 1/f$$
$$\omega = 2\pi f$$
$$1\text{atm} = 1.013 \times 10^5 Pa$$
$$\rho = \frac{\Delta m}{\Delta V}$$
$$p = \frac{\Delta F}{\Delta A}$$
$$p_2 = p_1 + \rho g\left(y_1 - y_2\right)$$
$$p = p_0 + \rho g h$$
$$R = Av$$
$$p_1 + \frac{1}{2}\rho v_1^2 + \rho g y_1 = p_2 + \frac{1}{2}\rho v_2^2 + \rho g y_2$$
$$p + \frac{1}{2}\rho v^2 + \rho g y = \text{a constant}$$