$$
\begin{aligned}
G &= 6.67 \times 10^{-11}\ N \cdot m^2/kg^2 \\
g &= 9.8 m/s^2 \\
c &= 3.00 \times 10^8 m/s \\
m_{\mathrm{e}} &= 9.11 \times 10^{-31}\ kg \\
m_{\mathrm{p}} &= 1.67 \times 10^{-27}\ kg \\
1\ \mathrm{m} &= 3.28\ \mathrm{ft} \\
1\ \mathrm{lb} &= 4.45\ N \\
\frac{d}{dx}x &= 1 \\
\frac{d}{dx}\left(au\right) &= a\frac{du}{dx} \\
\frac{d}{dx}\left(u+v\right) &= \frac{du}{dx}+\frac{dv}{dx} \\
\frac{d}{dx}x^m &= mx^{m-1} \\
\frac{d}{dx}\left(uv\right) &= u\frac{dv}{dx}+v\frac{du}{dx} \\
\int dx &= x \\
\int au\ dx &= a\int u\ dx \\
\int \left(u+v\right)dx &= \int u\ dx + \int v\ dx \\
\int x^m\ dx &= \frac{x^{m+1}}{m+1} \quad (m \neq -1) \\
\Delta x &= x_2 - x_1 \\
\bar{v} &= \frac{\Delta x}{\Delta t} = \frac{x_2 - x_1}{t_2 - t_1} \\
\bar{s} &= \frac{\text{total distance}}{\Delta t} \\
v &= \frac{dx}{dt} \\
\bar{a} &= \frac{\Delta v}{\Delta t} = \frac{v_2 - v_1}{t_2 - t_1} \\
a &= \frac{dv}{dt} \\
v &= v_0 + at \\
x - x_0 &= v_0 t + \frac{1}{2}at^2 \\
v^2 &= v_0^2 + 2a\left(x - x_0\right) \\
x - x_0 &= \frac{1}{2}\left(v_0 + v\right)t \\
x - x_0 &= vt - \frac{1}{2}at^2 \\
a_x &= a\cos\theta \\
a_y &= a\sin\theta \\
a &= \sqrt{a_x^2 + a_y^2} \\
\tan\theta &= \frac{a_y}{a_x} \\
\vec{a}\cdot\vec{b} &= ab\cos\phi \\
c &= ab\sin\phi \\
\vec{v} &= \frac{d\vec{r}}{dt} \\
\vec{a} &= \frac{d\vec{v}}{dt} \\
x - x_0 &= v_{0x}t \\
y - y_0 &= v_{0y}t - \frac{1}{2}gt^2 \\
y &= \left(\tan\theta_0\right)x - \frac{gx^2}{2\left(v_0\cos\theta_0\right)^2} \\
R &= \frac{v_0^2}{g}\sin\left(2\theta_0\right)
\end{aligned}
$$

$$
\begin{aligned}
a &= \frac{v^2}{r} \\
T &= \frac{2\pi r}{v} \\
\Sigma\vec{F} &= m\vec{a} \\
W &= mg \\
\vec{F}_{\mathrm{AB}} &= -\vec{F}_{\mathrm{BA}} \\
f_s &= \mu_s N \\
f_k &= \mu_k N \\
F &= \frac{mv^2}{r} \\
K &= \frac{1}{2}mv^2 \\
\Delta K &= K_f - K_i = W \\
W &= Fd\cos\phi \\
W &= \vec{F}\cdot\vec{d} \\
W_g &= mgd\cos\phi \\
\Delta K &= W_a + W_g \\
W &= \int_{x_i}^{x_f} F(x)\ dx \\
F &= -kx \\
W_s &= -\frac{1}{2}kx^2 \\
\bar{P} &= \frac{W}{\Delta t} \\
P &= \frac{dW}{dt} \\
P &= \vec{F}\cdot\vec{v} \\
U &= mgy \\
U(x) &= \frac{1}{2}kx^2 \\
E &= K + U \\
F(x) &= -\frac{dU(x)}{dx} \\
W_{\mathrm{app}} &= \Delta E \\
\Delta E &= -f_k d \\
P &= \frac{dE}{dt} \\
x_{\mathrm{com}} &= \frac{1}{M}\Sigma_{i=1}^{n} m_i x_i \\
\vec{r}_{\mathrm{com}} &= \frac{1}{M}\Sigma_{i=1}^{n} m_i \vec{r}_i \\
\Sigma\vec{F}_{\mathrm{ext}} &= M\vec{a}_{\mathrm{cm}} \\
\vec{p} &= m\vec{v} \\
\Sigma\vec{F} &= \frac{d\vec{p}}{dt} \\
\vec{P} &= M\vec{v}_{\mathrm{cm}} \\
\Sigma\vec{F}_{\mathrm{ext}} &= \frac{d\vec{P}}{dt} \\
\vec{P} &= \text{constant}
\end{aligned}
$$