

Possibly useful relations (feel free to detach this page):

$$\begin{aligned}
\vec{v}_{avg} &= \Delta \vec{x} / \Delta t \\
\vec{a}_{avg} &= \Delta \vec{v} / \Delta t \\
v &= v_0 + at \\
v_{avg} &= \frac{v_0 + v}{2} \\
x &= x_0 + v_0 t + \frac{1}{2} at^2 \\
v^2 &= v_0^2 + 2a(x - x_0) \\
R &= \frac{v_0^2}{g} \sin 2\theta \\
h &= \frac{v_0^2}{2g} \sin^2 \theta \\
\vec{F}_{net} &= m\vec{a} \\
\vec{F}_{BA} &= -\vec{F}_{AB} \\
\vec{W} &= m\vec{g} \\
\vec{g} &= 9.80 \text{ m/s}^2 \text{ downward} \\
0 &\leq f_s \leq \mu_s N \\
f_k &= \mu_k N \\
\frac{F}{A} &= Y \frac{\Delta L}{L} \\
F_k &= -kx \\
W &= Fd \cos \theta \\
W_{net} &= -\Delta PE = \Delta KE \\
KE &= \frac{1}{2} mv^2 \\
PE_k &= \frac{1}{2} kx^2 \\
PE_g &= mgh \\
KE_i + PE_i + W_{nc} &= KE_f + PE_f \\
P &= \frac{W}{\Delta t} \\
\text{Eff} &= \frac{W_{out}}{W_{in}} \\
F_G &= G \frac{mM}{r^2} \\
G &= 6.67 \times 10^{-11} \text{ N} \cdot \text{m}^2 / \text{kg}^2 \\
\vec{I} &= \vec{F}_{avg} \Delta t \\
\vec{p} &= m\vec{v} \\
\vec{F}_{net} &= \frac{\Delta \vec{p}}{\Delta t} \\
v_1 - v_2 &= v'_2 - v'_1 \\
\theta &= \frac{s}{r} \\
v &= r\omega \\
f &= \frac{1}{T} \text{ and } \omega = 2\pi f = \frac{2\pi}{T} \\
a_c &= \frac{v^2}{r} = r\omega^2 \\
F_c &= m \frac{v^2}{r} = mr\omega^2 \\
KE_{trans} &= \frac{1}{2} mv^2 \\
KE_{rot} &= \frac{1}{2} I\omega^2 \\
I_{point} &= MR^2 \\
I_{disk} &= \frac{1}{2} MR^2 \\
I_{sphere} &= \frac{2}{5} MR^2 \\
\tau &= rF \sin \theta = r_{\perp} F \\
\omega &= \Delta \theta / \Delta t \\
\alpha &= \Delta \omega / \Delta t \\
\tau &= I\alpha \\
L &= I\omega \\
\tau &= \frac{\Delta L}{\Delta t} \\
P &= \frac{F}{A} \\
P_{gauge} &= P - P_{atm} \\
\rho &= \frac{M}{V} \\
Q &= \frac{\Delta V}{\Delta t} = Av \\
Q &= \frac{\Delta P \pi r^4}{8\eta L} \\
\text{Power} &= PQ \\
A \cdot v &= \text{constant} \\
P + \rho gy + \frac{1}{2} \rho v^2 &= \text{constant} \\
F_B &= \rho g V_{displaced} \\
F_{ST} &= \gamma L \\
P &= \frac{4\gamma}{r} \\
h &= \frac{2\gamma}{\rho g r} \\
N_R &= \frac{\rho v L}{\eta} = \frac{2\rho v r}{\eta} \\
x_{rms} &= \sqrt{2Dt} \\
x(t) &= A \cos \omega t \text{ and } x_{max} = A \\
v(t) &= -A\omega \sin \omega t \text{ and } v_{max} = A\omega \\
a(t) &= -A\omega^2 \cos \omega t \text{ and } a_{max} = A\omega^2 \\
E &= \frac{1}{2} kx^2 + \frac{1}{2} mv^2 = \frac{1}{2} kx_{max}^2 = \frac{1}{2} mv_{max}^2 \\
v &= \sqrt{T/\mu} \text{ with } \mu = \frac{m}{L} \\
\text{spring: } \omega &= \sqrt{k/m} \\
\text{pendulum: } \omega &= \sqrt{g/\ell} \\
y(x, t) &= A \cos(\omega t \pm kx) \text{ with } - \text{ for left-moving wave} \\
\omega &= \frac{2\pi}{T} \text{ and } k = \frac{2\pi}{\lambda} \\
v &= \lambda f = \frac{\omega}{k} \\
v_{sound} &= 331 \text{ m/s} \sqrt{\frac{T}{273 \text{ K}}} \\
\text{string: } \lambda_n &= \frac{2L}{n}, f_n = \frac{nv}{2L} \text{ with } n = 1, 2, 3, \dots \\
\text{open-open: } \lambda_n &= \frac{2L}{n}, f_n = \frac{nv}{2L} \text{ with } n = 1, 2, 3, \dots \\
\text{open-closed: } \lambda_n &= \frac{4L}{n}, f_n = \frac{nv}{4L} \text{ with } n = 1, 3, 5, \dots \\
f_{obs} &= f_{src} \frac{v \pm v_{src}}{v \pm v_{obs}} \text{ with } - \text{ for src moving towards obs} \\
f_{obs} &= f_{src} \frac{v \pm v_{obs}}{v} \text{ with } + \text{ for obs moving towards src} \\
f_{beat} &= |f_1 - f_2| \\
I &= \frac{P}{A} = \frac{P}{4\pi r^2} \\
\beta &= 10 \log \frac{I}{I_0} \text{ in dB with } I_0 = 10^{-12} \text{ W/m}^2 \\
1 \text{ atm} &= 10^5 \text{ Pa} = 760 \text{ mm} \cdot \text{Hg} \\
\rho_{water} &= 10^3 \text{ kg/m}^3 \\
1 \text{ cal} &= 4.186 \text{ J and } 1 \text{ Cal} = 1000 \text{ cal} \\
\cos \theta &= \text{adjacent/hypotenuse} \\
\sin \theta &= \text{opposite/hypotenuse} \\
\tan \theta &= \sin \theta / \cos \theta \\
x &= \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}
\end{aligned}$$