Kaavoja IF1 (2010)

$$\sum \vec{F}_i = m\vec{a}\ ; W = \vec{F}\cdot\Delta\vec{s}\ ; W = \Delta K\ ; W = -\Delta U\ ; U = mgy\ ;$$

$$\vec{p} = m\vec{v}\ ; \vec{J} = \vec{F}\Delta t\ ; s = r\theta, v = r\omega\ ;\ a_T = r\alpha$$

$$\vec{F} = \frac{d\vec{p}}{dt}\ ; K = \frac{1}{2}mv^2 ; U = \frac{1}{2}kx^2\ ; \vec{\tau} = \vec{r}\times\vec{F}\ ; \tau = I\alpha\ ; K = \frac{1}{2}I\omega^2\ ;$$

$$\vec{L} = \vec{r}\times m\vec{v}\ ; \vec{L} = I\vec{\omega}\ ; \vec{\tau} = \frac{d\vec{L}}{dt}\quad \sum \tau_i = I\alpha\ ; \frac{dA}{dt} = \frac{1}{2}rv\sin\phi\ ;$$

$$\frac{F_\perp}{A} = Y\frac{\Delta l}{l_0}\ ;\ \Delta p = -B\frac{\Delta V}{V}\ ;\ \frac{F_{||}}{A} = S\frac{x}{h}\ ;\ p = \frac{F_\perp}{A}\ ;$$

$$F_g = \frac{Gm_1m_2}{r^2}\ ; U(r) = -\frac{Gm_Em}{r}\ ;$$

$$\frac{dV}{dt} = Av\ ;\qquad p + \rho\, gy + \frac{1}{2}\rho\, v^2 = vakio$$

$$L = L_o(1+\alpha\ \Delta T)\ ;\quad V = V_o(1+3\alpha\ \Delta T)\ ;\ \frac{F}{A} = -Y\alpha\ \Delta T\ ;$$

$$Q = mc\Delta T\ ;\ Q = nC\Delta T\ ;\ Q = \pm mL\ ;$$

$$H = \sigma\ AeT^4\ ; H = \frac{dQ}{dt} = kA\frac{T_{hot} - T_{cold}}{L}\ ; H = \frac{1}{r_{th}}\left(T_{piiri} - T_{ympäristö}\right);$$

$$pV = nRT\ ; pV = NkT\quad K_{tr} = \frac{3}{2}nRT\ ;\ \frac{1}{2}m\left(v^2\right)_{av} = \frac{3}{2}kT\ ;$$

$$C_V = \frac{3}{2}R\ ;\qquad C_V = \frac{5}{2}R\ ;\quad C_V = 3R\ ;\ C_P = C_V + R$$

$$\Delta Q = nC_V \Delta T \,;\, dQ = nC_V dT \,;\, dU = nC_V dT \,;\, dQ = nC_P dT$$

$$W = \int_1^2 dW = \int_{V_1}^{V_2} p dV \,;\, dU = dQ - dW \,;\quad \gamma = \frac{C_P}{C_V} \,;$$

$$pV = vakio \,:\, pV^\gamma = vakio \,;\, TV^{\gamma - 1} = vakio \,;$$

$$W = nC_V (T_1 - T_2) \,;\quad e = \frac{W}{Q_H} = \frac{Q_H + Q_C}{Q_H} \,;\, K = \frac{|Q_C|}{|W|} \,;\quad dS = \frac{dQ}{T} \,;$$

$$\omega = \sqrt{\frac{k}{m}} \,;\, \omega = \sqrt{\frac{g}{L}} \,;\, \omega = \sqrt{\frac{mgd}{I}} \,;\, E = \frac{1}{2} m v^2 + \frac{1}{2} k x^2 = \frac{1}{2} k A^2 \,;$$

$$y(x,t) = A \cos\lfloor kx - \omega\, t \rfloor \,;\, v = \sqrt{\frac{F}{\mu}} \,;\quad f_1 = \frac{1}{2L} \sqrt{\frac{F}{\mu}} \,;$$

$$P_{av} = \frac{1}{2} \sqrt{\mu F} \omega^2 A^2 \,;\, I = \frac{1}{2} \sqrt{\rho B} \omega^2 A^2 = \frac{p_{\max}{}^2}{2 \rho v} \,;\, p_{\max} = BkA \,;$$

$$v = \sqrt{\frac{B}{\rho}} \,;\, v = \sqrt{\frac{\gamma\, RT}{M}} \,;\, v = \sqrt{\frac{Y}{\rho}} \,;\, \beta = (10 dB) \log \frac{I}{I_0} \,;\quad f_v = \frac{v + v_v}{v + v_s} f_s \,;$$