PREMO GIBANJE	ZVEZA	KROŽNO GIBANJE ($r = $ konst)

Enakomerno in enakomerno pospešeno gibanje

$\vec{s} = \vec{v}_0 t + \vec{s}_0$	$s = \theta r$	$\vec{\theta} = \vec{\omega}_0 t + \vec{\theta}_0$
$\vec{s} = \frac{1}{2}\vec{a}t^2 + \vec{v}_0 t + \vec{s}_0$	$\vec{v} = \vec{\omega} \times \vec{r} \quad v = \omega r$	$\vec{\theta} = \frac{1}{2}\vec{\alpha}t^2 + \vec{\omega}_0 t + \vec{\theta}_0$
$\vec{v} = \vec{a}t + \vec{v}_0$	$\vec{a}_{\mathrm{t}} = \vec{\alpha} \times \vec{r} \quad a_{\mathrm{t}} = \alpha r$	$\vec{\omega} = \vec{\alpha}t + \vec{\omega}_0$
$v^2 - v_0^2 = 2\vec{a}(\vec{s} - \vec{s}_0)$		$\omega^2 - \omega_0^2 = 2\vec{\alpha}(\vec{\theta} - \vec{\theta}_0)$

Statika in dinamika (izrazi z I veljajo samo za fiksne osi, vzdolž osi)

$\sum \vec{F} = \vec{0}$	$\vec{M} = \vec{r} \times \vec{F}$	$\sum \vec{M} = \vec{0}$
$\sum \vec{F} = m\vec{a}$	$I = \sum_i m_i r_{i\perp}^2$	$\sum \vec{M} = I\vec{\alpha}$
$\vec{F}_{\mathrm{pr}} = -k\vec{x}$		$\vec{M}_{\mathrm{vz}} = -\kappa\vec{\theta}$

Energija, gibalna in vrtilna količina

$A = \vec{F} \cdot \vec{s}$		$A = \vec{M} \cdot \vec{\theta}$
$E_{\mathrm{k}} = \frac{1}{2}mv^2$		$E_{\mathrm{k}} = \frac{1}{2}I\omega^2$
$E_{\mathrm{p,pr}} = \frac{1}{2}kx^2$		$E_{\mathrm{p,vz}} = \frac{1}{2}\kappa\theta^2$
$P = \vec{F} \cdot \vec{v}$		$P = \vec{M} \cdot \vec{\omega}$
$\vec{p} = m\vec{v}$	$\vec{L} = \vec{r} \times \vec{p}$	$\vec{L} = I\vec{\omega}$
$\overrightarrow{\Delta p} = \vec{F}\Delta t$ (IGK)		$\overrightarrow{\Delta L} = \vec{M}\Delta t$ (IVK)
$\vec{p}_{\mathrm{A}} = \vec{p}_{\mathrm{B}}$ (IOGK)		$\vec{L}_{\mathrm{A}} = \vec{L}_{\mathrm{B}}$ (IOVK)

Vzmet, nihanje

$\omega_0^2 = k/m$	$\omega_0^2 = \kappa/I$
$a + \omega_0^2 x = \mathrm{d}^2 x/\mathrm{d}t^2 + \omega_0^2 x = 0$	$\alpha + \omega_0^2\theta = \mathrm{d}^2\theta/\mathrm{d}t^2 + \omega_0^2\theta = 0$
$\Rightarrow x = A\cos(\omega_0 t + \varphi)$	$\Rightarrow \theta = A\cos(\omega_0 t + \varphi)$

Kroženje $\theta = n(2\pi) + \theta_0$; $\omega = 2\pi f$; $f = 1/T$; $\vec{a}_{\mathrm{r}} = -\omega^2 r\ \hat{r} = -v^2/r\ \hat{r}$; $a^2 = a_{\mathrm{r}}^2 + a_{\mathrm{t}}^2$

Splošni izrazi $P = E/t$; $m = \rho V$; $m = \rho_A A$; $m = \rho_l l$; $p = F/A$

Težišče $\sum_i (m_i \vec{r}_i) = (\sum_i m_i)\vec{r}_{\mathsf{T}}$

Gravitacija $\vec{F}_{\mathrm{g}} = m\vec{g}$; $E_{\mathrm{p,g}} = mgh$; $\vec{F}_{\mathrm{g}} = -GMm/r^2\ \hat{r}$; $E_{\mathrm{p,g}} = -GMm/r$

Podlaga (trenje) $F_{\mathrm{ts}} \leq \mu_{\mathrm{s}}F_{\mathrm{n}}$; $F_{\mathrm{p}}^2 = F_{\mathrm{n}}^2 + F_{\mathrm{ts}}^2$; $F_{\mathrm{td}} = \mu_{\mathrm{d}}F_{\mathrm{n}}$; $F_{\mathrm{p}}^2 = F_{\mathrm{n}}^2 + F_{\mathrm{td}}^2$

Vztr. moment $I_0 = I_{\mathsf{T}} + md^2$; $I_{\mathsf{T}} = \frac{1}{12}ml^2$ (palica); $I_{\mathsf{T}} = \frac{1}{2}mR^2$ (valj); $I_{\mathsf{T}} = \frac{2}{5}mR^2$ (krogla)

Energija $E_{\mathrm{B}} - E_{\mathrm{A}} = A_{\mathrm{nek}}$ (IME); $E_{\mathrm{B}} = E_{\mathrm{A}}$ (IOME)

Deformacija, raztezanje $F = EA\Delta l/l_0$; $\Delta l/l_0 = \alpha_l \Delta T$; $\Delta V/V_0 = \alpha_V \Delta T$

Nihanje $\omega_0^2 = g/l$ (matematično); $\omega_0^2 = mgr_{\mathsf{T}}/(I_{\mathsf{T}} + mr_{\mathsf{T}}^2)$ (fizikalno)

Valovanje $x(z,t) = A\sin(kz \pm \omega t)$ (potujoče); $x(z,t) = A\sin(kz)\cos(\omega t)$ (stoječe);
$c = \omega/k = \lambda f$; $c^2 = F_{\mathrm{v}}/\rho_l$ (vrv); $c^2 = E/\rho$ (trdne snovi); $c^2 = \gamma RT/M$ (plini); $d = n\lambda/2$
(enaka konca); $d = (2n-1)\lambda/4$ (različna konca)

Mehanika tekočin $p + \rho gh + \frac{1}{2}\rho v^2 = $ konst; $q_V = V/t = Av = $ konst; $A = \Delta pV$; $F_{\mathrm{vz}} = \rho_{\mathrm{t}}gV$

Toplota $\Phi = Q/t$; $\Phi = \lambda A\Delta T/d$; $d_{\mathrm{sk}}/\lambda_{\mathrm{sk}} = d_1/\lambda_1 + d_2/\lambda_2$; $Q = mc\Delta T$; $Q_{\mathrm{t}} = mq_{\mathrm{t}}$; $Q_{\mathrm{i}} = mq_{\mathrm{i}}$

Termodinamika in idealni plin $\Delta U = Q - A$; $pV = nRT$; $n = m/M$; $\gamma = c_p/c_V$;
$c_p - c_V = R/M$; $c_V = \frac{3}{2}R/M$ (enoat); $c_V = \frac{5}{2}R/M$ (dvoat); $c_V = \frac{7}{2}R/M$ (večat)

PROCES		ΔU	Q	A	ZVEZA MED KOLIČ.
izohorni	$dV = 0$	$mc_V\Delta T$	$mc_V\Delta T$	0	$p/T = $ konst
izobarni	$dp = 0$	$mc_V\Delta T$	$mc_p\Delta T$	$m(R/M)\Delta T$	$V/T = $ konst
izotermni	$dT = 0$	0	$p_1 V_1 \ln(V_2/V_1)$	$p_1 V_1 \ln(V_2/V_1)$	$pV = $ konst
adiabatni	$dQ = 0$	$mc_V\Delta T$	0	$-mc_V\Delta T$	$pV^\gamma = $ konst; $TV^{\gamma-1} = $ konst; $pT^{\gamma/(1-\gamma)} = $ konst

Konstante $g = 9.8$ m/s^2; $G = 6.67 \times 10^{-11}$ Nm^2/kg^2; $R = 8.31$ J/mol K

PREMO GIBANJE	ZVEZA	KROŽNO GIBANJE ($r = $ konst)

Enakomerno in enakomerno pospešeno gibanje

$\vec{s} = \vec{v}_0 t + \vec{s}_0$	$s = \varphi r$	$\vec{\varphi} = \vec{\omega}_0 t + \vec{\varphi}_0$
$\vec{s} = \frac{1}{2}\vec{a}t^2 + \vec{v}_0 t + \vec{s}_0$	$\vec{v} = \vec{\omega} \times \vec{r} \quad v = \omega r$	$\vec{\varphi} = \frac{1}{2}\vec{\alpha}t^2 + \vec{\omega}_0 t + \vec{\varphi}_0$
$\vec{v} = \vec{a}t + \vec{v}_0$	$\vec{a}_\mathrm{t} = \vec{\alpha} \times \vec{r} \quad a_\mathrm{t} = \alpha r$	$\vec{\omega} = \vec{\alpha}t + \vec{\omega}_0$
$v^2 - v_0^2 = 2\vec{a}(\vec{s} - \vec{s}_0)$		$\omega^2 - \omega_0^2 = 2\vec{\alpha}(\vec{\varphi} - \vec{\varphi}_0)$

Statika in dinamika (izrazi z J veljajo samo za fiksne osi, vzdolž osi)

$\sum \vec{F} = \vec{0}$	$\vec{M} = \vec{r} \times \vec{F}$	$\sum \vec{M} = \vec{0}$
$\sum \vec{F} = m\vec{a}$	$J = \sum_i m_i r_{i\perp}^2$	$\sum \vec{M} = J\vec{\alpha}$
$\vec{F}_\mathrm{pr} = -k\vec{x}$		$\vec{M}_\mathrm{vz} = -D\vec{\varphi}$

Energija, gibalna in vrtilna količina

$A = \vec{F} \cdot \vec{s}$		$A = \vec{M} \cdot \vec{\varphi}$
$W_\mathrm{k} = \frac{1}{2}mv^2$		$W_\mathrm{k} = \frac{1}{2}J\omega^2$
$W_\mathrm{p,pr} = \frac{1}{2}kx^2$		$W_\mathrm{p,vz} = \frac{1}{2}D\varphi^2$
$P = \vec{F} \cdot \vec{v}$		$P = \vec{M} \cdot \vec{\omega}$
$\vec{G} = m\vec{v}$	$\vec{\Gamma} = \vec{r} \times \vec{G}$	$\vec{\Gamma} = J\vec{\omega}$
$\overrightarrow{\Delta G} = \vec{F}\Delta t$ (IGK)		$\overrightarrow{\Delta \Gamma} = \vec{M}\Delta t$ (IVK)
$\vec{G}_\mathrm{A} = \vec{G}_\mathrm{B}$ (IOGK)		$\vec{\Gamma}_\mathrm{A} = \vec{\Gamma}_\mathrm{B}$ (IOVK)

Vzmet, nihanje

$\omega_0^2 = k/m$		$\omega_0^2 = D/J$
$a + \omega_0^2 x = \mathrm{d}^2x/\mathrm{d}t^2 + \omega_0^2 x = 0$		$\alpha + \omega_0^2\varphi = \mathrm{d}^2\varphi/\mathrm{d}t^2 + \omega_0^2\varphi = 0$
$\Rightarrow x = A\cos(\omega_0 t + \delta)$		$\Rightarrow \varphi = A\cos(\omega_0 t + \delta)$

Kroženje $\varphi = n(2\pi) + \varphi_0$; $\omega = 2\pi\nu$; $\nu = 1/T$; $\vec{a}_\mathrm{r} = -\omega^2 r\,\hat{r} = -v^2/r\,\hat{r}$; $a^2 = a_\mathrm{r}^2 + a_\mathrm{t}^2$

Splošni izrazi $P = W/t$; $m = \rho V$; $m = \sigma S$; $m = \lambda l$; $p = F/S$

Težišče $\sum_i (m_i \vec{r}_i) = (\sum_i m_i)\vec{r}_\mathsf{T}$

Gravitacija $\vec{F}_\mathrm{g} = m\vec{g}$; $W_\mathrm{p,g} = mgh$; $\vec{F}_\mathrm{g} = -GMm/r^2\,\hat{r}$; $W_\mathrm{p,g} = -GMm/r$

Podlaga (lepênje, trenje) $F_\mathrm{l} \le k_\mathrm{l}F_\mathrm{n}$; $F_\mathrm{p}^2 = F_\mathrm{n}^2 + F_\mathrm{l}^2$; $F_\mathrm{t} = k_\mathrm{t}F_\mathrm{n}$; $F_\mathrm{p}^2 = F_\mathrm{n}^2 + F_\mathrm{t}^2$

Vztr. moment $J_0 = J_\mathsf{T} + md^2$; $J_\mathsf{T} = \frac{1}{12}ml^2$ (palica); $J_\mathsf{T} = \frac{1}{2}mR^2$ (valj); $J_\mathsf{T} = \frac{2}{5}mR^2$ (krogla)

Energija $E_\mathrm{B} - E_\mathrm{A} = A_\mathrm{nek}$ (IME); $E_\mathrm{B} = E_\mathrm{A}$ (IOME)

Deformacija, raztezanje $F = ES\Delta l/l_0$; $\Delta l/l_0 = \alpha\Delta T$; $\Delta V/V_0 = \beta\Delta T$

Nihanje $\omega_0^2 = g/l$ (matematično); $\omega_0^2 = mgr_\mathsf{T}/(J_\mathsf{T} + mr_\mathsf{T}^2)$ (fizikalno)

Valovanje $x(z,t) = A\sin(kz \pm \omega t)$ (potujoče); $x(z,t) = A\sin(kz)\cos(\omega t)$ (stoječe); $c = \omega/k = \lambda\nu$; $c^2 = F_\mathrm{v}/\rho_l$ (vrv); $c^2 = E/\rho$ (trdne snovi); $c^2 = \gamma RT/M$ (plini); $d = n\lambda/2$ (enaka konca); $d = (2n-1)\lambda/4$ (različna konca)

Mehanika tekočin $p + \rho gh + \frac{1}{2}\rho v^2 = $ konst; $\Phi_V = V/t = Av = $ konst; $A = \Delta pV$; $F_\mathrm{vz} = \rho_\mathrm{t}gV$

Toplota $P = Q/t$; $P = \lambda S\Delta T/d$; $d_\mathrm{sk}/\lambda_\mathrm{sk} = d_1/\lambda_1 + d_2/\lambda_2$; $Q = mc\Delta T$; $Q_\mathrm{t} = mq_\mathrm{t}$; $Q_\mathrm{i} = mq_\mathrm{i}$

Termodinamika in idealni plin $\Delta W_\mathrm{n} = Q - A$; $pV = nRT$; $n = m/M$; $\kappa = c_p/c_V$; $c_p - c_V = R/M$; $c_V = \frac{3}{2}R/M$ (enoat); $c_V = \frac{5}{2}R/M$ (dvoat); $c_V = \frac{7}{2}R/M$ (večat)

PROCES		ΔW_n	Q	A	ZVEZA MED KOLIČ.
izohorni	$dV = 0$	$mc_V\Delta T$	$mc_V\Delta T$	0	$p/T = $ konst
izobarni	$dp = 0$	$mc_V\Delta T$	$mc_p\Delta T$	$m(R/M)\Delta T$	$V/T = $ konst
izotermni	$dT = 0$	0	$p_1V_1\ln(V_2/V_1)$	$p_1V_1\ln(V_2/V_1)$	$pV = $ konst
adiabatni	$dQ = 0$	$mc_V\Delta T$	0	$-mc_V\Delta T$	$pV^\kappa = $ konst; $TV^{\kappa-1} = $ konst; $pT^{\kappa/(1-\kappa)} = $ konst

Konstante $g = 9.8$ m/s^2; $G = 6.67 \times 10^{-11}$ Nm^2/kg^2; $R = 8.31$ J/mol K