

Prof Stick's

mostly good Physic's LATEX Cookbook

A LATEX cookbook for the NSW Stage 6 Physics Course

Formulae

Motion, forces and gravity

$\begin{array}{lll} s = ut + \frac{1}{2}at^2 & s = ut + \frac{1}{4}c\{1\}\{2\} \text{ a t'}2\\ v = u + at & v = u + at \\ v^2 = u^2 + 2as & v^2 = u^2 + 2as \\ \hline F_{net} = ma & \text{Delta U = mg \Delta h} \\ \Delta U = mg \Delta h & \text{Delta U = mg \Delta h} \\ \hline W = F_{\parallel} s = F s \cos \theta & W = F_{\parallel} \text{parallel s = F s \cos \widthat{hta}} \\ \hline P = \frac{\Delta E}{1} & P = \frac{\Delta E}{1} \text{ Delta E} \text{ Delta E} \text{ Delta t} \text{ Break of the ta} \\ \hline P = \frac{\Delta E}{1} \text{ mv}^2 & \text{K = frac {1} {2} m v^2} \\ \hline \sum \frac{1}{2} mv^2 & \text{Sum frac {1} {2} m v^2} \text{ before } = \text{ sum frac {1} {2} m v^2} \text{ and } \text{ loeta vee {p} = {vee {F}}_{-1} \text{ net }} \text{ belta t} \text{ loeta vee {p} = {vee {F}}_{-1} \text{ net }} \text{ loeta tee {p} = {vee {F}}_{-1} $	Equation	Latex
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$s = ut + \frac{1}{2}at^2$	$s = ut + \frac{1}{2} a t^2$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	v = u + at	v = u + at
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$v^2 = u^2 + 2as$	$v^2 = u^2 + 2as$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$F_{net} = ma$	\Delta $U = mg \setminus Delta h$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		\Delta U = mg \Delta h
$K = \frac{1}{2}mv^{2}$ $\sum \frac{1}{2}mv^{2}_{before} = \sum \frac{1}{2}mv^{2}_{after}$ $\sum mv_{before} = \sum mv_{after}$ $\Delta p = F_{net}\Delta t$ $a_{c} = \frac{v^{2}}{r}$ $\omega = \frac{\Delta \theta}{t}$ $T = r_{\perp}F = rF \sin \theta$ $V = \frac{1}{2}mv^{2}_{before}$ $V = \frac$	"	$W = F_{parallel s} = F s \cos \theta$
$K = \frac{1}{2}mv^{2}$ $\sum \frac{1}{2}mv^{2}_{before} = \sum \frac{1}{2}mv^{2}_{after}$ $\sum mv_{before} = \sum mv_{after}$ $\Delta p = F_{net}\Delta t$ $a_{c} = \frac{v^{2}}{r}$ $\omega = \frac{\Delta \theta}{t}$ $T = r_{\perp}F = rF \sin \theta$ $V = \frac{1}{2}mv^{2}_{before}$ $V = \frac$	$P = \frac{\Delta E}{\Delta t}$	$P = \frac{\Delta E}{Delta E}$
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$K = \frac{1}{2}mv^2$	$K = \frac{1}{2} \text{ m v}^2$
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\sum_{1}^{1} m v_{before}^{2} = \sum_{1}^{1} m v_{after}^{2}$	$\label{lem:condition} $\sup \frac{1}{2} \ m \ v^2_{before} = \sum \frac{1}{2} \ m \ v^2_{after}$$
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\sum mv_{before} = \sum mv_{after}$	$\scalebox{$\setminus$ sum m \ecosy_{after}$} = \scalebox{$\setminus$ m \ecosy_{after}$}$
$a_c = \frac{v^2}{r}$ $a_c = \frac{\sqrt{2}}{r}$ $f_c = \frac{\sqrt{2}$	$\Delta p = F_{net} \Delta t$	$\label{eq:def-Delta} \ensuremath{Vec} \{p\} = \{\ensuremath{vec}\{F\}\}_{\text{net}} \ensuremath{Delta}\ t$
$\omega = \frac{\Delta\theta}{t} \qquad \qquad \text{lomega} = \text{ldfrac} \{\text{lDelta} \text{ ltheta} \} \{t\}$ $F_c = \frac{mv^2}{r} \qquad \qquad F_c = \text{ldfrac} \{m \text{ v}^2\} \{r\}$ $\tau = r_\perp F = rF \sin\theta \qquad \qquad \text{ltau} = r_\perp \{\text{perp} \} F = r \text{ F} \text{ lsin} \text{ ltheta}$ $v = \frac{2\pi r}{T} \qquad \qquad v = \text{ldfrac} \{2 \text{ lpi } r\} \{T\}$ $U = -\frac{GMm}{t} \qquad \qquad U = -\text{ldfrac} \{G \text{ M m} \} \{r\}$ $F = \frac{GMm}{r^2} \qquad \qquad F = \text{ldfrac} \{G \text{ M m} \} \{r^2\}$ $r^3 = \frac{GM}{r^3} \qquad \qquad \text{ldfrac} \{r^3\} \{T^2\} = \text{ldfrac} \{G \text{ M} \} \{4 \text{ lpi}^2\}$	$a_c = \frac{v^2}{r}$	$a_c = \operatorname{frac}\{v^2\}\{r\}$
$ \frac{r}{\tau = r_{\perp}F = rF \sin \theta} \qquad \text{ \tau = r_{\perp} F = r F \sin \tau \} $ $ \frac{v = \frac{2\pi r}{T} \qquad v = \text{ \dfrac} \{2 \neq r\} \{T\} \} $ $ U = -GMm \qquad U = -\text{ \dfrac} \{G \neq M \neq r\} \{T\} $ $ \frac{r}{F = \frac{GMm}{r^2}} \qquad F = \text{ \dfrac} \{G \neq M \neq r\} \{T^2\} $ $ \frac{r}{r^3} = \frac{GM}{r^3} \qquad \text{ \dfrac} \{r^3\} \{T^2\} = \text{ \dfrac} \{G \neq M\} \{4 \neq r\} \} $	$\omega = \frac{\Delta \theta}{t}$	$\label{eq:comega} $$\operatorname{dfrac} \left(\Delta \right) $$ is $$ \ \ $$ \ \ $$ \ \ $$ \ \ $$ \ \ $$ \ \ $$ \ \ $$ \ \ $$ \ \ $$ \ \ $$ \ \ $$ \ \ $$ \ \ $$ \ \ $$ \ \ $$ \ \ \ $$ \ \ \ $$ \$
$v = \frac{2\pi r}{T}$ $V = \left\{\frac{2 \pi r}{T}\right\}$ $U = -\frac{GMm}{T}$ $V = -\frac{GMm}{T}$	$F_c = \frac{mv^2}{r}$	$F_c = \langle dfrac\{m \ v^2\}\{r\}$
$ \frac{V = \frac{V}{T}}{U = -\frac{GMm}{T}} $ $ U = -\frac{GMm}{T} $ $ V = \frac{GMm}{T} $ $ V = GMm$	$\tau = r_{\perp}F = rF\sin\theta$	$tau = r_{perp} F = r F \cdot sin \cdot theta$
$F = \frac{GMm}{r^2}$ $F = \frac{GMm}{r^2}$ $= \frac{GMm}{r^3}$ $= \frac{GMm}{r^3} $ $\frac{f^2}{f^3} = \frac{GM}{r^3} $ $\frac{f^2}{f^3} = \frac{GM}{r^3} $ $\frac{f^2}{f^3} = \frac{GM}{r^3} $	$v = \frac{1}{T}$	$v = \left\{ 2 \right\} \{T\}$
$\frac{r^2}{r^3 = GM} $ \dfrac\{r^3\}\{T^2\} = \dfrac\{G M\}\{4 \pi^2\}	$U = -\frac{GMm}{r}$	$U = - dfrac \{G M m\} \{r\}$
$= \frac{d^2r^3}{T^2} = \frac{G M}{4 \cdot p_1^2}$	r^2	$F = \operatorname{dfrac} \{G \ M \ m\} \{r^2\}$
<u>1 T//</u>	$\frac{r^3}{T^2} = \frac{GM}{4\pi^2}$	$\label{eq:dfrac} $$ dfrac{r^3}{T^2} = dfrac{G M}{4 \pi^2}$

Waves and thermodynamics

Equation	Latex	
$v = f\lambda$	$v = f \setminus lambda$	
1		

$f = \int_{t}^{t}$	$f = \{1\}\{t\}$
$f_{beat} = f_2 - f_1 $	$f_{\text{beat}} = f_2 - f_1 $
$f = f \frac{(v_{wave} + v_{observer})}{(v_{wave} + v_{source})}$	$f = f \cdot dfrac\{(v_{wave} + v_{observer})\}\{(v_{wave} + v_{source})\}$
$d\sin\theta = m\lambda$	$d \cdot \sin \theta = m \cdot a $
$n_1\sin\theta_1=n_2\sin\theta_2$	$n_1 \sin \theta_1 = n_2 \sin \theta_2$
$n_x = \frac{c}{v_x}$	$n_x = \operatorname{dfrac}\{c\}\{v_x\}$
$I = I_{max} \cos^2 \theta$	$I = I_{max} \cos^2 \theta$
$\sin \theta_c = \frac{n_2}{n_1}$	$\sin \theta _c = \theta _{n_2} \{n_1\}$
$I_1 r_1^2 = I_2 r_2^2$	$I_1 r^2_1 = I_2 r^2_2$
$Q = mc\Delta T$	$Q = m c \Delta T$
$\frac{Q}{t} = \frac{kA\Delta T}{d}$	$\label{eq:defrac} $$ \left\{ Q \right\} \left\{ t \right\} = \left\{ A \right\} $$$

Electricity and magnetism

Equation	Latex
$E = \frac{V}{d}$	$E = \{V\} \{d\}$
F = qE	$\langle \operatorname{vec}\{F\} = \operatorname{q} \langle \operatorname{ee}\{E\} \rangle$
$V = \frac{\Delta U}{q}$	$V = \left\{ \left\{ U\right\} \left\{ q\right\} \right\}$
$F = \frac{1}{4\pi\epsilon_0} \frac{q_1 q_2}{r^2}$	$F = \left\{1\right\} \left\{4 \right\} \left\{4 \right\} \left\{6 \left(q_1 q_2\right) \right\} $
W = qV	W = q V
W = qEd	W = q E d
$I = \frac{q}{t}$	$I = \langle dfrac\{q\}\{t\}$
V = IR	V = I R
P = IV	P = I V
$B = \frac{\mu_0 I}{2\pi r}$	$B = \left\{ \frac{0 \text{ I}}{2 \text{ pi r}} \right\}$
$\frac{B - 2\pi r}{B = \mu_0 NI}$ L	$B = \left\{ \sum_{0 \in I} N I \right\} \{L\}$
$\overline{F = qv_{\perp}B} = qvB\sin\theta$	$F = q v_{perp} B = q v B \sin \theta$
$F = lI_{\perp}B = lIB\sin\theta$	$F = 1 I_{perp B} = 1 I B \sin \theta$
$\frac{F}{l} = \frac{\mu_0}{2\pi} \frac{I_1 I_2}{r}$	$\label{eq:first-def} $$ \left\{I\right\} = \left(\sum_{i=1}^{n} \left\{1_{i} I_{2}\right\}\right) $$$
$\frac{1}{\Phi} = \frac{2\pi r}{B_{\parallel}A} = BA\cos\theta$	$\Phi = B_{parallel A} = B A \cos \theta$
$\epsilon = -N \frac{\Delta \Phi}{\Delta t}$	$\label{eq:proposition} $$ \operatorname{Phi} {\Delta (Phi) {\Delta (Phi) } } $
$\frac{\Delta t}{\tau = nIA_{\perp}B = nIAB\sin\theta}$	$tau = n I A_perp B = n I A B \sin \theta$
$ V_p = N_p \\ V_s = N_s $	$\label{eq:continuous_p} $$ \left\{V_p\right\} \left\{V_s\right\} = \left\{N_p\right\} \left\{N_s\right\} $$$
$V_p I_p = V_s I_s$	V_p I_p = V_s I_s

Quantum, special relativity and nuclear

Equation	Latex
$\lambda = \frac{h}{mv}$	$\label{lambda} $$ \lambda = \frac{h}{m v}$$
$t = t_0 $ $(1 - \frac{v^2}{c^2})$	$t = \left\{ t_0 \right\} \left\{ \left\{ Big(1 - \left\{ v^2 \right\} \left\{ c^2 \right\} \right\} \right\}$
$l = l_0 (1 - \frac{v^2}{c^2})$	$1 = 1_0 \left\{ \left(\frac{v^2}{c^2} \right) \right\}$
$p_{v} = \frac{m_{0}v}{\left(1 - \frac{v^{2}}{c^{2}}\right)}$	$p_v = \left\{ m_0 \ v \right\} \left\{ \left\{ Big(1 - \left\{ v^2 \right\} \left\{ c^2 \right\} \right\} \right\}$
$K_{max} = hf - \phi$	$K_{\max} = h f - \phi$
$\lambda_{max} = \frac{t}{T}$	$\label{eq:lambda} $$ \lambda_{max} = \frac{t}{T}$
$E = mc^2$	$E = m c^2$
E = hf	E = h f
$\frac{1}{\lambda} = R(\frac{1}{n_f^2} - \frac{1}{n_i^2})$ $N_t = N_0 e^{-\lambda t}$	$\label{eq:dfrac} $$ \left\{1\right\} \left\{ \operatorname{lambda} \right\} = R \left\{ \operatorname{lambda} \right\} - \left\{ \operatorname{n^2_i} \right\} \left\{ \operatorname{n^2_i} \right\} \\ $
$N_t = N_0 e^{-\lambda t}$	$N_t = N_0 e^{-\lambda t}$
$\lambda = \frac{ln2}{t_{\frac{1}{2}}}$	$\label{lambda} $$ \lambda = \left(\ln 2 \right) \left(t_{1} \right) \left(2 \right) $$$

Year 11

Kinematics and Dynamics

Equation	Latex
$F_{AB} = -F_{BA}$	$\langle \operatorname{Vec}\{F\}\{AB\} = - \langle \operatorname{Vec}\{F\}\{BA\} \rangle$
$\overline{F_x} = F\cos\theta$	$F_x = F \cos \theta$
$\overline{F_y} = F \sin \theta$	$F_y = F \cdot \sinh \theta$
$f_{friction} = \mu F_N$	$\ensuremath{\operatorname{vec}} \{f\}_{\text{friction}} = \ensuremath{\operatorname{lmu}} \ensuremath{\operatorname{vec}} \{F\}_{N}$
$P = \frac{\Delta E}{\Delta t}$	$P = \frac{\Delta E}{\Delta E} $
$P = F_{\parallel} v = F v \cos \theta$	$P = F_{parallel v} = F v \cos \theta$

Electricity and magnetism

Equation	Latex
$\Sigma I = 0$	\Sigma I = 0
$\Sigma V = 0$	\Sigma V = 0
$\overline{R_{series}} = R_1 + R_2 + \dots + R_n$	$R_{series} = R_1 + R_2 + + R_n$
$\frac{1}{R_{parallel}} = \frac{1}{R_1} + \frac{1}{R_2} + \dots + \frac{1}{R_n}$	$\label{eq:continuous} $$ \left\{1\right\} {R_{parallel}} = \left\{1\right\} {R_1} + \left\{1\right\} {R_2} + + \left\{1\right\} {R_n} $$$