$\propto$
$-x$
??
$\dot{x}t$
ω
ϕ
x_0
$_charts/shm_circ.eps$
$_0 \sin(\omega t +$
$\phi)$
$v =$
$\frac{\mathrm{d}x}{\mathrm{d}t} =$
$x_0\omega \cos(\omega t +$
$\phi)$
$a =$
$\frac{\mathrm{d}v}{\mathrm{d}t} =$
$-x_0\omega^2 \sin(\omega t +$
$\phi)$
$=$
$-\omega^2 x$
x
$F =$
$-kx$
$\{a = \frac{F}{m} = \frac{-kx}{m} = -\omega^2 xx = x_0 \sin(\omega t + \phi) \Rightarrow$
$\frac{-kx}{m} =$
$-\omega^2 x$
$\Rightarrow \omega =$
$\sqrt{\frac{k}{m}}$
$\pi \frac{}{\omega = 2\pi\sqrt{\frac{m}{k}}}$
$\pi\sqrt{\frac{l}{g}}$
$\sin\theta \approx$
θ
v
T
A
λ
f
$_charts/wave_prop.eps$
$\frac{}{T = \frac{v}{\lambda}}$
$=$
P_0
r
$\frac{}{A = \frac{P_0}{4\pi r^2}}$
??
$_charts/pol_dir.eps$
I_0
$_0 =$
I_0
$\Rightarrow$
$A_0 =$
$\sqrt{\frac{I_0}{k}}$
θ
I_0
$_t =$
$kA_t{}^2$
$=$
$k(\cos\theta A_0)^2$
$=$
$(\cos\theta)^2 kA_0{}^2$
$=$
$(\cos\theta)^2 I_0$
$\int_0^{2\pi} (\cos\theta)^2 \frac{I_0}{2\pi} \mathrm{d}\theta$
$=$
$\frac{1}{2} I_0$
??
n_1
n_2
θ_1
θ_2
$_charts/refre_dia.eps$
$\sin n_1\theta_1 =$
$\sin n_2\theta_2$
??
v
$\backslash$
v_v
$_charts/dopeff_sta_sou_appv ie.eps$
$f_0 =$
$\frac{v}{\lambda}$
$\frac{}{\lambda' = \frac{v + v_v}{\lambda} = f_0 \frac{v + v_v}{v}}$
$v \frac{}{\lambda = f_0 \frac{v - v_v}{v}}$
??
v
$\backslash$
v_s
$_charts/dopeff_appsou_sta_v ie.eps$
$f_0 =$
$\frac{v}{\lambda}$
$\frac{}{\lambda' = \frac{v}{\frac{v - v_s}{f_0}} = f_0 \frac{v}{v - v_s}}$