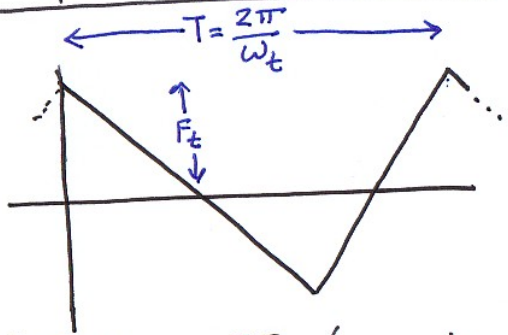


Physics 213a-2011 Class 13 Wednesday 9-28-11 Summary

Example of super posed forces



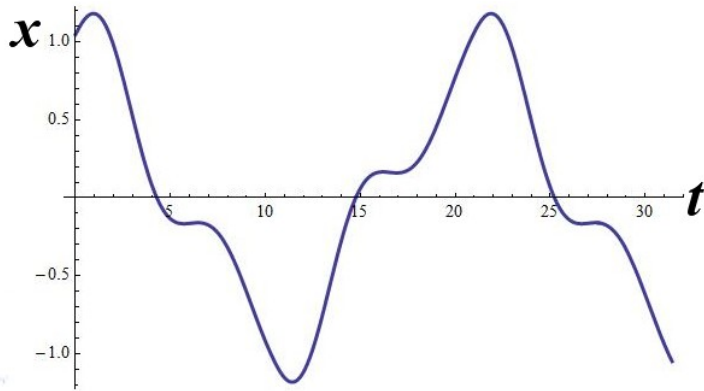
Apply this drive force to a damped oscillator

Ch. 8 $\Rightarrow F_{\text{drive}} = \frac{8 F_t}{\pi^2} \left(\cos \omega_t t + \frac{1}{3^2} \cos 3\omega_t t + \frac{1}{5^2} \cos 5\omega_t t - \dots \right)$

Response: $x(t) = A(\omega_t, K) \cos[\omega_t t - S(\omega_t)] + A(3\omega_t, \frac{K}{3^2}) \cos[3\omega_t t - S(3\omega_t)] + \dots$

Where $A(\omega_d, F_0) \equiv \frac{F_0/m}{\sqrt{(\omega_0^2 - \omega_d^2)^2 + \gamma^2 \omega_d^2}}$ and $S(\omega_d) = \tan^{-1} \frac{\gamma \omega_d}{\omega_0^2 - \omega_d^2} + \begin{cases} 0 & \omega_d < \omega_0 \\ \pi & \omega_d > \omega_0 \end{cases}$

Example: $\omega_t = 0.3 \omega_0$
Sum of first 100 terms



Example: $\omega_t = 0.001 \omega_0$
Sum of first 100 terms

