

Driven Harmonic Oscillators

Suppose that a driven harmonic oscillator with $\beta = \frac{1}{3}\omega_0$ is driven with $F = F_0 \cos(\omega t)$, with drive frequency $\omega = \frac{1}{3}\omega_0$. Find the amplitude "D" and phase " δ " of the motion

$x(t) = D \cos(\omega t - \delta)$, expressing them purely in terms of F_0 , K , and numerical constants. (The other terms should cancel out)

- Simplify the expressions as much as possible.