4. ПРИМЕР: ГАРМОНИЧЕСКИ ИЗМЕНЯЮЩАЯСЯ СИЛА

$$m\ddot{x} = F(t)$$

$$x(0) = \dot{x}(0) = 0$$

$$F(t) = P\sin\omega t$$

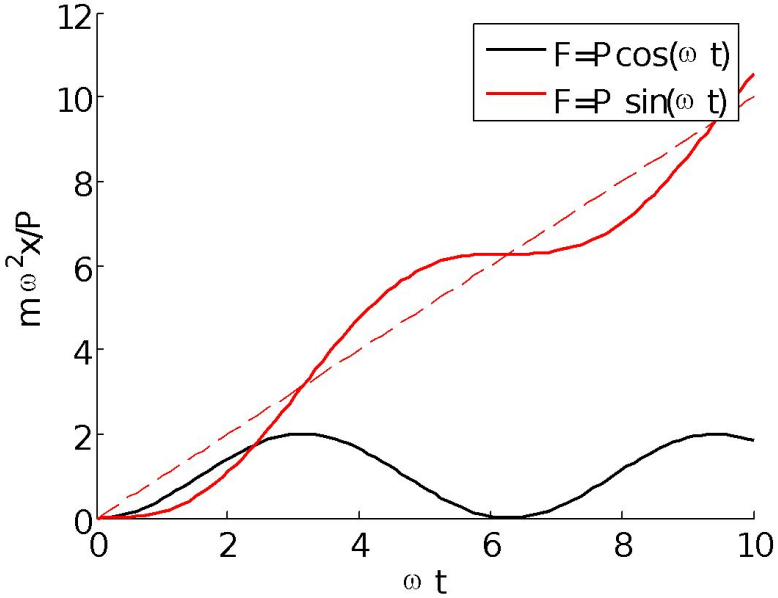
$$x(t) = -\frac{P}{m\omega^2}\sin\omega t + C_1 t + C_2$$

$$C_2 = 0,\ C_1 = \frac{P}{m\omega}$$

$$x(t) = \frac{P}{m\omega^2}\left(\omega t - \sin\omega t\right)$$

$$F(t) = P\cos\omega t$$

$$x(t) = -\frac{P}{m\omega^2}\cos\omega t + C_1 t + C_2$$

$$C_2 = \frac{P}{m\omega^2},\ C_1 = 0$$

$$x(t) = \frac{P}{m\omega^2}\left(1 - \cos\omega t\right)$$