Table 1: Steady State Solutions for unforced SDOF Systems

System	Steady State Solution
Undamped Spring Mass	$\frac{v_0}{p}\sin(pt) + x_0\cos(pt)$
Damped Spring Mass	$e^{-\zeta pt}\left[\frac{v_0+\zeta p x_0}{\sqrt{1-\zeta^2}p}\sin(\sqrt{1-\zeta^2}pt) + x_0\cos(\sqrt{1-\zeta^2}pt)\right]$

Table 2: Steady State Solutions for forced SDOF Systems

System	Steady State	DMF (or Amplitude Response)	Transmissibility
Forced Spring Mass	$\left(\frac{F_0}{k}\right)\left(\frac{1}{1-\left(\frac{\omega}{p}\right)^2}\right)\sin(\omega t)$	$\frac{\mathbb{X}}{\delta_{\text{ST}}} = \frac{1}{\left\lvert 1-\left(\frac{\omega}{p}\right)^2\right\rvert}$	$\frac{1}{\left\lvert 1-\left(\frac{\omega}{p}\right)^2\right\rvert}$
Rotating Imbalance	$\frac{\tilde{m}e/k}{\left\lvert 1-\left(\frac{\omega}{p}\right)^2\right\rvert}\sin(\omega t-\phi)$	$\frac{M\mathbb{X}}{\tilde{m}e} = \frac{\left(\frac{\omega}{p}\right)^2}{\left\lvert 1-\left(\frac{\omega}{p}\right)^2\right\rvert}$	$\frac{1}{\left\lvert 1-\left(\frac{\omega}{p}\right)^2\right\rvert}$
Base Excitation	$a\left(\frac{1}{1-\left(\frac{\omega}{p}\right)^2}\right)\sin(\omega t)$	$\frac{\mathbb{X}}{\delta_{\text{ST}}} = \frac{1}{\left\lvert 1-\left(\frac{\omega}{p}\right)^2\right\rvert}$	$\frac{\left(\frac{\omega}{p}\right)^2}{\left\lvert 1-\left(\frac{\omega}{p}\right)^2\right\rvert}$