

3.** A damped single degree-of-freedom system is acted upon a force $F = F_o \sin(\omega t)$. The damper of the system is of a type which imposes a force $F_c = a\dot{x}|\dot{x}|$ whose magnitude is proportional to the square of the speed and whose direction opposes the velocity. Using the concept of equivalent viscous damping, determine the approximate displacement of the system at resonance.