Part I Problems

Problem 1: A driven spring-mass-dashpot system is modeled by the DE

$$m\ddot{x} + c\dot{x} + kx = F_0 \cos \omega t$$

with $m = 1$, $c = 6$, and $k = 45$. $F_0 = 50$. Find the amplitude $A(\omega)$ of the response as a function of the input frequency ω and find the frequency which gives the largest system response. Is this a system for which 'practical resonance' occurs?

18.03SC Differential Equations
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