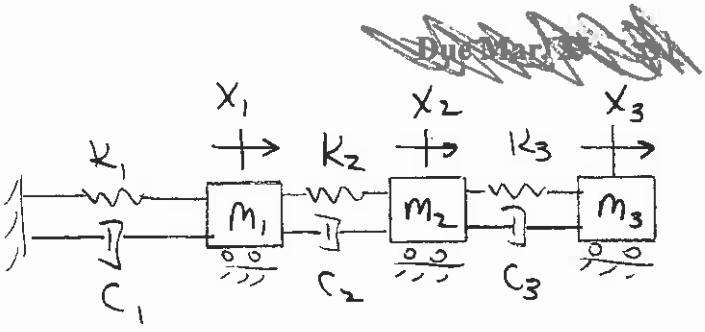
Hm. Wk. 2



$M_1 = 1 \quad K_1 = 25 \quad C_1 = 0.5$
$M_2 = 1 \quad K_2 = 15 \quad C_2 = 0.3$ (consistent units)
$M_3 = 1 \quad K_3 = 15 \quad C_3 = 0.3$

For the system shown, determine:

1. The real modes from the undamped system, $\left[\left(\hat{\phi}_1\right) \quad \left(\hat{\phi}_2\right) \quad \left(\hat{\phi}_3\right)\right]$.
2. The complex modes from the damped system.
3. The natural frequencies and damping of the system (#2), ω_r and ζ_r.
4. Diagonalize the mass and stiffness matrices using the results from 1 and 2 – show that they are the same. Use the mass-normalized eigenvectors.
5. Change $K_1 = 15$ and repeat the above steps. What changes and why?
6. Write out the equation to generate the FRF $\frac{X_1}{F_1}$. DO NOT SOLVE.