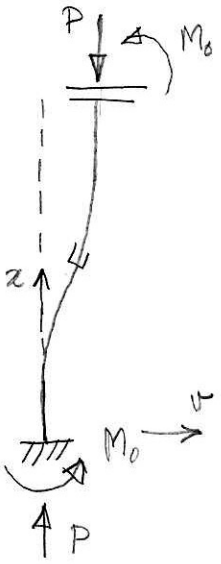


$$M(x) = -M_0 + P v(x)$$

$$v'' = -\frac{M(x)}{EI} = \frac{M_0}{P}\left(\frac{P}{EI}\right)k^2 - \left(\frac{P}{EI}\right)k^2 v \quad \Rightarrow \quad v'' + k^2 v = \frac{M_0}{P}k^2$$

$$v(x) = A\sin kx + B\cos kx + \frac{M_0}{P}$$

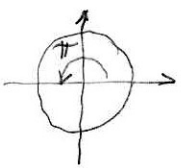
$$v'(x) = Ak\cos kx - Bk\sin kx$$

CC: $v'(0) = 0 \Rightarrow Ak = 0 \Rightarrow \boxed{A = 0}$

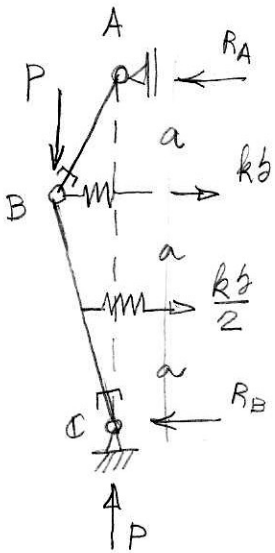
$v(0) = 0 \Rightarrow B + \frac{M_0}{P} = 0 \Rightarrow \boxed{B = -\frac{M_0}{P}}$

$$v'(l) = \frac{M_0}{P}k\sin kl = 0$$

$$\therefore \sin kl = 0 \Rightarrow kl = \pi$$



$$\boxed{P_{cr} = \frac{\pi^2 EI}{l^2}}$$



$$\circlearrowleft M_B^{sup} = 0 \Rightarrow R_A \cdot a = 0 \Rightarrow R_A = 0$$

$$\circlearrowleft M_C^{sup} = 0 \Rightarrow P\cdot b - kb \times 2a - \frac{kb}{2} \times a = 0$$

$$\boxed{P_{cr} = \frac{5}{2}ka}$$