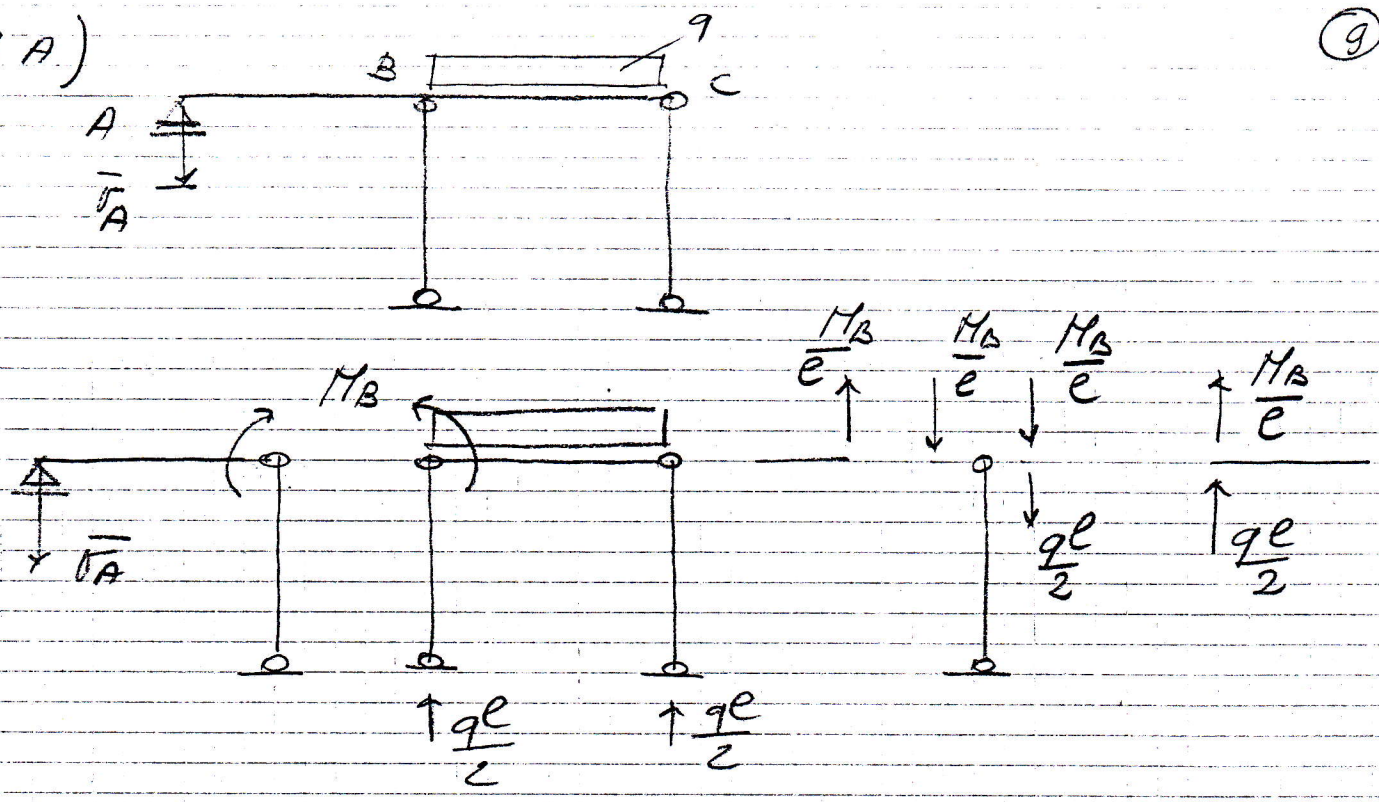
3 A)



$$\varphi_B^S = \frac{\bar{\Gamma}_A}{e} - \frac{\ell}{EA}\left(\frac{2M_B}{e} + \frac{qe}{2}\right)\frac{1}{\ell} - \frac{M_B e}{3EI} =$$

$$= \varphi_B^0 = \frac{\ell}{EA}\left(\frac{2M_B}{e} + \frac{qe}{2}\right)\frac{1}{\ell} - \frac{qe}{2}\cdot\frac{\ell}{EA}\cdot\frac{1}{\ell} + \frac{M_B}{e}\cdot\frac{\ell}{EA}\cdot\frac{1}{\ell} +$$

$$+ \frac{M_B e}{3EI} - \frac{qe^3}{24EI}$$

$$\frac{5M_B}{eEA} + \frac{2M_B e}{3EI} = \frac{\bar{\Gamma}_A}{e} - \frac{qe}{2EA} - \frac{qe}{2EA} + \frac{qe}{2EA} + \frac{qe^3}{24EI}$$

$$M_B\left(\frac{5}{eA} + \frac{2e}{3I}\right) = \frac{\bar{\Gamma}_A E}{e} - \frac{qe}{2}\left(\frac{1}{A} - \frac{e^2}{12I}\right)$$

$$M_B = \frac{\frac{\bar{\Gamma}_A E}{e} - \frac{qe}{2}\left(\frac{1}{A} - \frac{e^2}{12I}\right)}{\frac{5}{eA} + \frac{2e}{3I}}$$