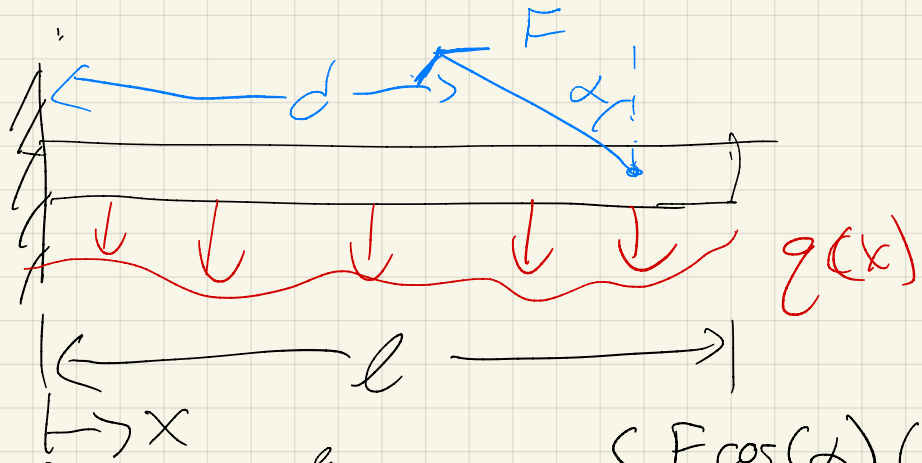
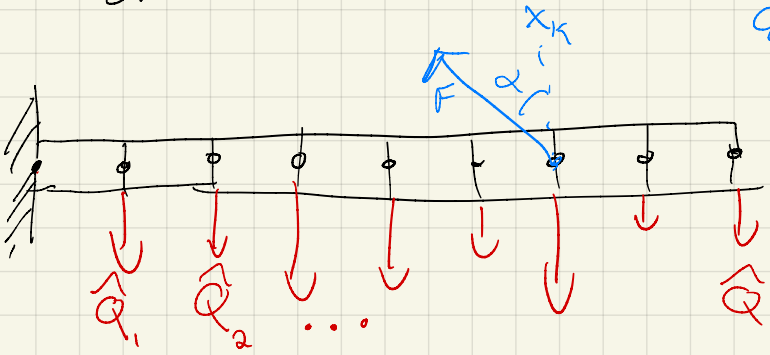


$$M(x) = -\int_x^{\ell} q(z)\cdot(z-x)\,dz + \begin{cases} F\cos(\alpha)(d-x); & \text{if } x \le d \\ 0; & \text{if } x > d \end{cases}$$ ✓

Break beam into $\underline{m}$ nodes

assume Facts at one node: x_k



$$\hat{Q}_i = \int_{x_{i-1}}^{x_i} q(x)\,dx$$

Note: $Q_0 = 0$

$$M(x_n) = -\sum_{i=n}^{m-1}\left[\underbrace{\left(Q_i\,(x_i - x_n) + Q_{i+1}\,(x_{i+1} - x_n)\right)\left(\tfrac{1}{2}\right)}_{q(z)(z-x)\text{ via trapezoidal rule}}\underbrace{(x_{i+1} - x_i)}_{dz}\right]$$

$$+ \begin{cases} F\cos(\alpha)(x_k - x_n); & \text{if } x_n \le x_k \\ 0; & \text{if } x_n > x_k \end{cases}$$