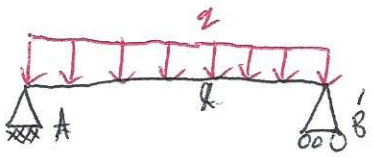
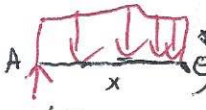
Eg. Python for simply supported beam



let $l = 5m$, $q = 20\ kN/m$

① Equations

$F_{Ay} = F_{By} = \frac{ql}{2}$, $F_{Ax} = 0$



$0 < x < 5$

$M_0 = 0$, $M_0 + \frac{qx^2}{2} - F_{Ay}x$

$M = F_{Ay}x - \frac{qx^2}{2}$, $M = \frac{qlx}{2} - \frac{qx^2}{2}$, $M = \frac{q}{2}(lx - x^2)$

$V = F_{Ay} - qx$, $\frac{ql}{2} - qx$, $q(l/2 - x)$

② Script

```
import numpy as np
l = 5
q = 20
x = np.linspace(0, l, 20)
M = q/2*(l*x - x**2)
V = q*(l/2 - x)
```

③ Plot

```
from matplotlib import pyplot as plt
plt.figure(figsize=(10,4))
plt.plot([0]*len(x), color='k')
plt.plot(M, color='b')
plt.plot(V, color='r')
```