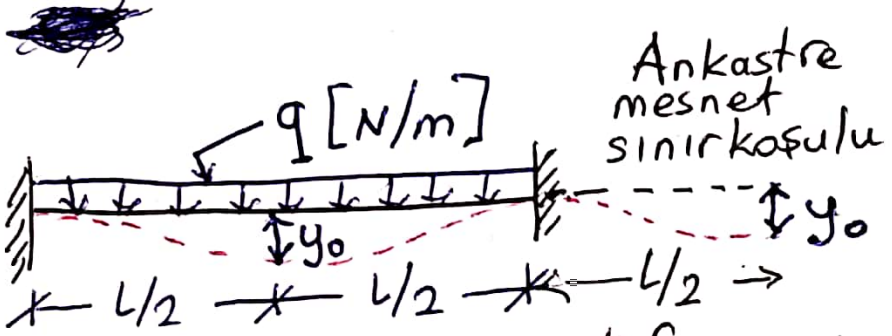


Kiriş malzemesinin Elastisite Modülü (E)
Atalet momenti (I)

Kirişin çökme denklemi: diferansiyel $\frac{d^4y}{dx^4} = \frac{q}{EI}$

Sonlu farklar operatörü:

$h^4 D^4 \equiv$ (1) (−4) (6) (−4) (1)

$D^4 \triangleq \frac{d^4}{dx}$; $D^4 y \triangleq \frac{d^4y}{dx^4} = 1\cdot y_{i-2} - 4y_{i-1} + 6y_i - 4y_{i+1} + 1y_i$

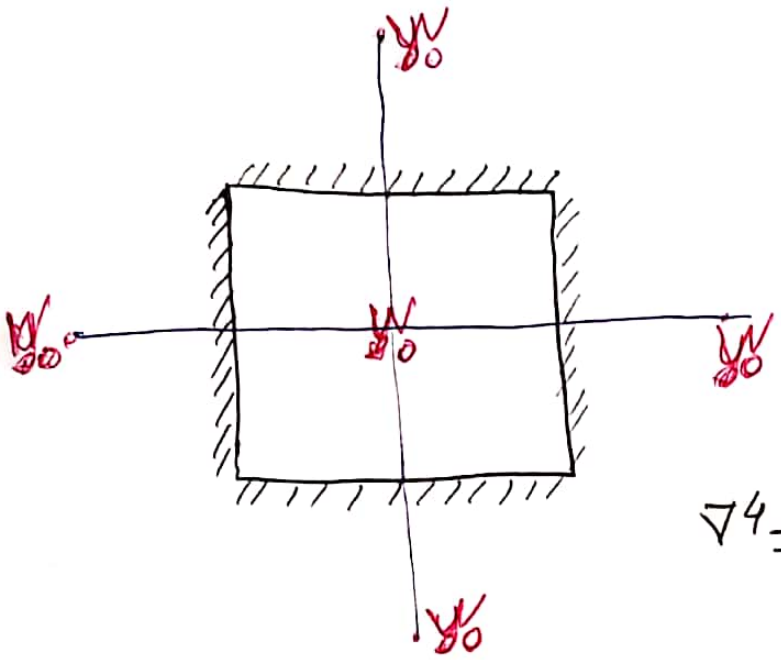
y_0 0 y_0 0 y_0

$h = L/2$ için

$$h^4 \frac{d^4y}{dx^4} = h^4 \frac{q}{EI} = 1\cdot y_0 - 4\cdot 0 + 6\cdot y_0 - 4\cdot 0 + 1\cdot y_0$$

$$(L/2)^4 \frac{q}{EI} = 8\,y_0 \Rightarrow y_0 = \frac{qL^4}{128EI}$$

CamScanner ile tarandı

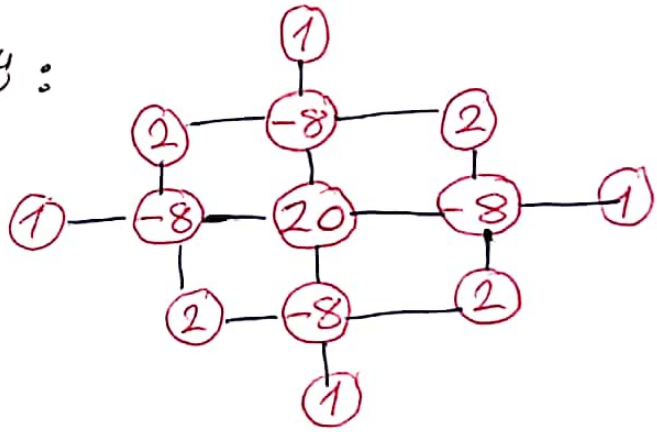


P basıncı etkisinde bir levhanın eğilmesi diferansiyel denklemi:

$$\nabla^4 w = \frac{P}{D}$$

$$\nabla^4 = \frac{\partial^4}{\partial x^4} + 2\frac{\partial^4}{\partial x^2 \partial y^2} + \frac{\partial^4}{\partial y^4}$$

Sonlu farklar operatörü:



$$h^4 \nabla^4 \equiv$$

$$\boxed{h^4 \nabla^4 w = h^4 \frac{P}{D}}$$

$h = a/2$ için (yukarıdaki şekil)

$$20 \cdot w_0 - 8(0+0+0+0) + 2(0+0+0+0) + 1(w_0 + w_0 + w_0 + w_0)$$

$$= h^4 \frac{P}{D}$$

$$24 w_0 = \left(\frac{a}{2}\right)^4 \frac{P}{D}$$

$$W_0 = P \cdot a^4 / 384 \cdot D$$

CamScanner ile tarandı