

Name; Ejemeka Chidera waoma Cynthia

Course; Eng381

Department; Petroleum,

Matric no; 151Eng07(015)

$$Q \quad EI \frac{d^2 y}{dx^2} = \frac{w}{2} (L-x)^2$$

$$EI m^2 = 0$$

$$m^2 = 0$$

$$m = \pm 0$$

$$y = e^{0x} (A + Bx)$$

$$y = A + Bx$$

P.I

$$y = Fx^2 + Gx^3 + Hx^4$$

$$\frac{dy}{dx} = 2Fx + 3Gx^2 + 4Hx^3$$

$$\frac{d^2 y}{dx^2} = 2F + 6Gx + 12Hx^2$$

$$EI [2F + 6Gx + 12Hx^2] = \frac{w}{2} (L-x)^2$$

$$2FEI + 6GEIx + 12HEIx^2 = \frac{w}{2} (L-x)^2$$

$$4FEI + 12GEIx + 24HEIx^2 = w(L^2 - 2Lx + x^2)$$

$$4FEI + 12GEIx + 24HEIx^2 = wL^2 - 2wLx + wx^2$$

$$24HEI = w$$

$$H = \frac{w}{24EI}$$

$$12GEI = -2wL$$

$$12GEI = -2wL$$

$$G = \frac{-2wL}{12EI} = \frac{-wL}{6EI}$$

$$4FEI = wL^2$$

$$F = \frac{wL^2}{4EI}$$

$$4FEI = wL^2$$

$$y = \left(\frac{wL^2}{4EI} \right) x^2 - \left(\frac{wL}{6EI} \right) x^3 + \left(\frac{w}{24EI} \right) x^4$$

$$y = \frac{6wL^2x^2 - 4wLx^3 + wx^4}{24EI}$$

$$P \cdot I = y = \frac{w}{24EI} [6L^2x^2 - 4Lx^3 + x^4]$$

$$y = A + Bx + \frac{w}{24EI} [6L^2x^2 - 4Lx^3 + x^4]$$

$$\text{at } y=0 \text{ and } \frac{dy}{dx} = 0 \text{ at } x=0$$

$$0 = A$$

$$\frac{dy}{dx} = B + \frac{w}{24EI} [12L^2x - 12Lx^2 + 4x^3]$$

$$0 = B$$

$$y = \frac{w}{24EI} [6L^2x^2 - 4Lx^3 + x^4]$$

$$y = \frac{wx^2}{24EI} [6L^2 - 4Lx + x^2]$$

when $x=L$

$$y = \frac{wL^2}{24EI} [6L^2 - 4L^2 + L^2]$$

$$y = \frac{wL^4}{24EI} [1]$$

$$y = \frac{wL^4}{8EI}$$

Name, Gemeka Chideraunomg Cynthia

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Matrie no, 151ENG07015

$$2EI \frac{d^2y}{dx^2} = \frac{w}{2} (L-x)^2$$

$$EI m^2 = 0$$

$$m^2 = 0$$

$$m = \pm 0$$

$$y = e^{0x} (A+Bx)$$

$$y = A+Bx$$

P.I

$$y = fx^2 + Gx^3 + Hx^4$$

$$\frac{dy}{dx} = 2fx + 3Gx^2 + 4Hx^3$$

$$\frac{d^2y}{dx^2} = 2f + 6Gx + 12Hx^2$$

$$EI [2f + 6Gx + 12Hx^2] = \frac{w}{2} (L-x)^2$$

$$2fEI + 6GEIx + 12HEIx^2 = \frac{w}{2} (L-x)^2$$

$$4fEI + 12GEIx + 24HEIx^2 = w(L^2 - 2Lx + x^2)$$

$$4fEI + 12GEIx + 24HEIx^2 = wL^2 - 2wLx + wx^2$$

$$24HEI = w$$

$$H = \frac{w}{24EI}$$

$$12GEI = -2wL$$

$$G = \frac{-2wL}{12EI} = \frac{-wL}{6EI}$$

$$4fEI = wL^2$$

$$f = \frac{wL^2}{4EI}$$

$$y = \left(\frac{wL^2}{4EI} \right) x^2 - \left(\frac{wL}{6EI} \right) x^3 + \left(\frac{w}{24EI} \right) x^4$$