

ENG 381 ASSIGNMENT I

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MATRIC NO:- 15/ENGO1/004

DEPARTMENT:- CHEMICAL ENGINEERING

$$1) \frac{d^2 y}{dx^2} - \frac{dy}{dx} - 2y = 8$$

For complementary function (C.F)

$$m^2 + m - 2m - 2 = 0$$

$$m(m+1) - 2(m+1)$$

$$m = -1 \text{ or } 2$$

$$y = Ae^{-x} + Be^{2x}$$

For particular integral (P.I)

Assumed P.I: $y = c$

$$\frac{dy}{dx} = 0$$

$$\frac{d^2 y}{dx^2} = 0$$

substituting in the original equation

$$0 - 0 - 2c = 8$$

$$-2c = 8$$

$$c = -4$$

$$y = -4$$

The general solution is CF + P.I

$$y = Ae^{-x} + Be^{2x} - 4$$

$$2) \frac{d^2 y}{dx^2} - 4y = 10e^{3x}$$

Complementary function

$$\frac{d^2 y}{dx^2} - 4y = 0$$

$$m^2 = 4$$

$$m = 2$$