



Normal

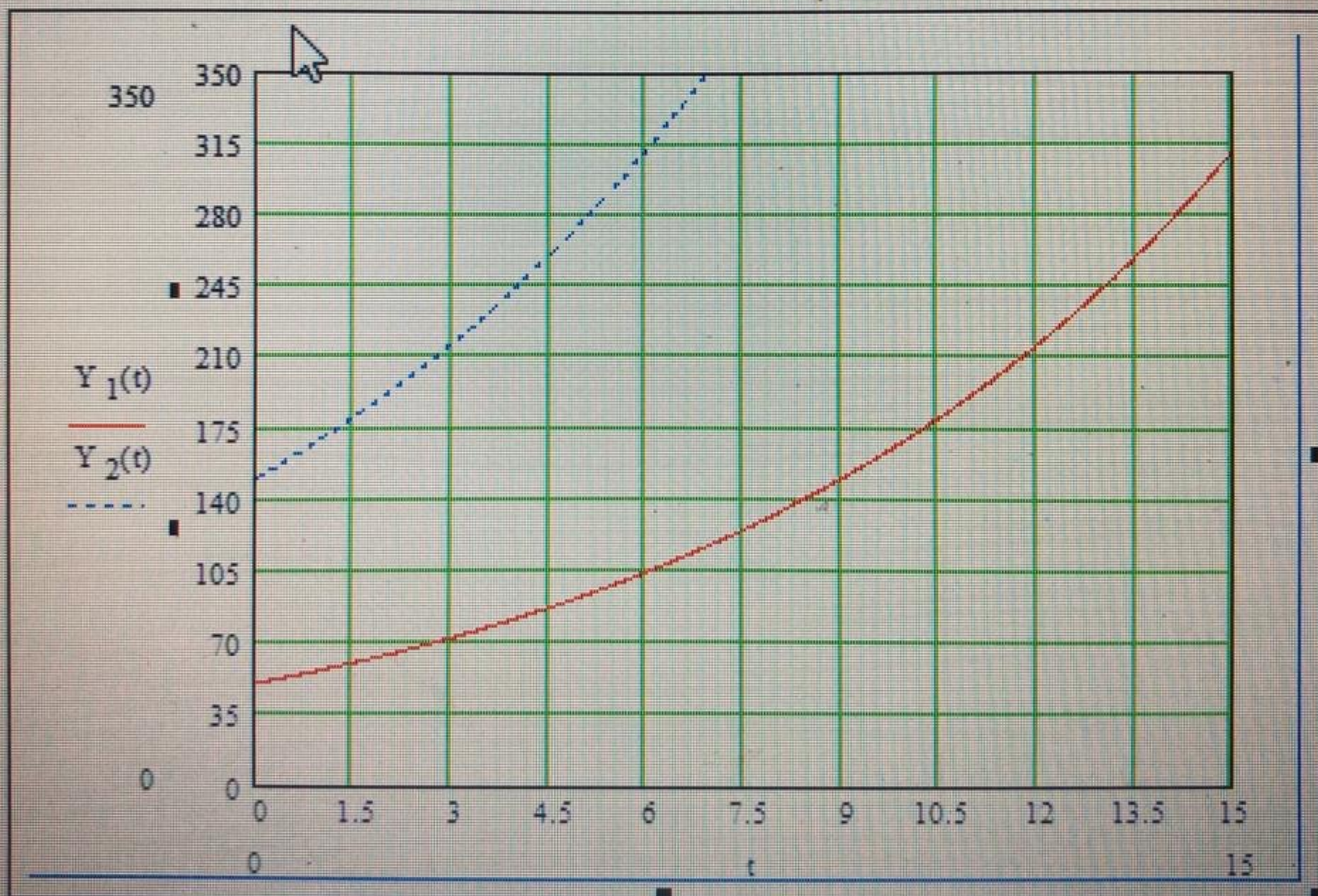
Arial

10

**B** *I* U

$$Y_1(t) := 50e^{0.122t}$$

$$Y_2(t) := 150e^{0.122t}$$





DANGNA VANCE ATUMITE

AERONAUTICAL & ASTRONAUTICAL ENGINEERING -

18/ENG091002

ENG282

$$y = y_0 e^{kt}$$

$$\frac{y}{y_0} = e^{kt}$$

$$\frac{y}{y_0} = e^{kt} = 3 \quad \text{at } t = 9.$$

$$\frac{y}{y_0} = e^{kt} = 9 \quad \text{at } t = 18.$$

$$\therefore y_0 = 50 \quad \text{--- (i)}$$

$$y_0 = 150 \quad \text{--- (ii)}$$

$$\therefore y = 50 e^{kt} \quad \text{--- (iii)}$$

$$y = 150 e^{kt} \quad \text{--- (iv)}$$

$$\therefore 3 = e^{kt}$$

$$\ln 3 = \ln e^{kt}$$

$$\ln 3 = k \cdot 9$$

$$k = \frac{\ln 3}{9}$$

$$k = 0.122$$

$$\therefore 9 = e^{kt}$$

$$\ln 9 = \ln e^{kt}$$

$$\ln 9 = k(18)$$

$$k = \frac{\ln 9}{18}$$

$$k = 0.122$$

$$\therefore y = 50 e^{0.122t} \quad \text{--- (v)}$$

$$y = 150 e^{0.122t} \quad \text{--- (vi)}$$