Mathematical Modelling

Week2

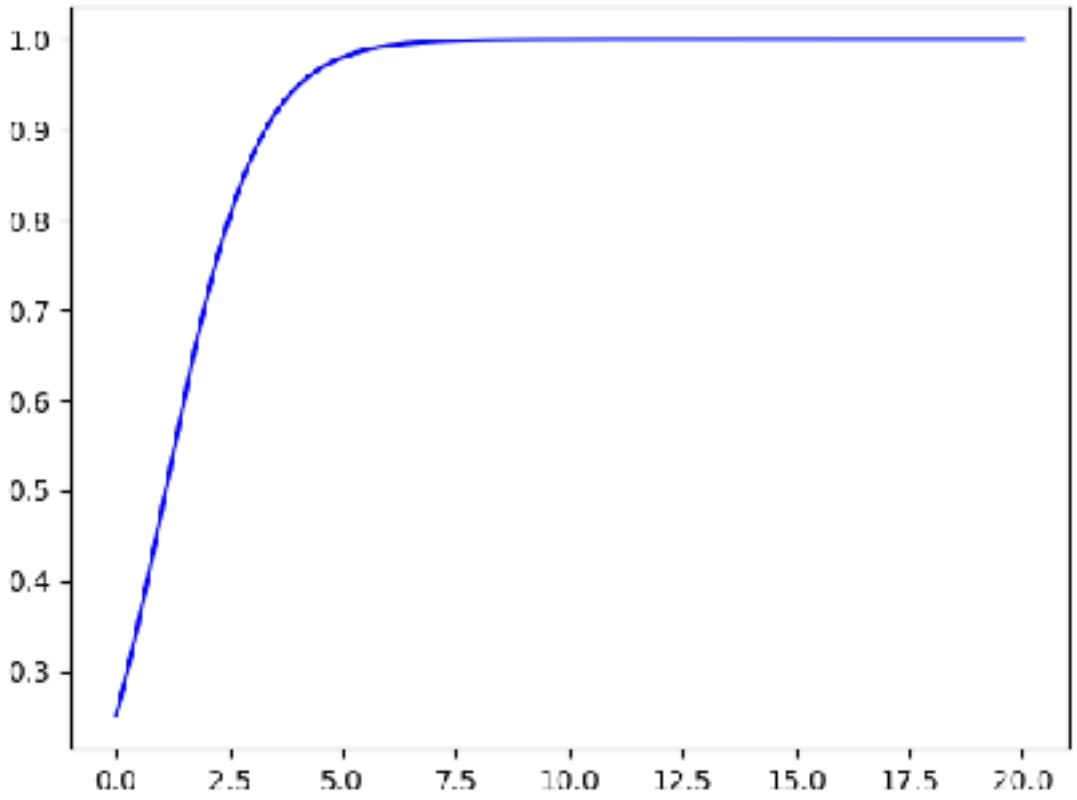
Homework 3.2(a):

$$\frac{dN}{dt} = \left(N \cdot (1 - N) - Y\right)$$

$$\Longrightarrow \qquad 0 = \left(\frac{1}{4} \cdot (1 - \frac{1}{4}) - Y\right)$$

$$\Longrightarrow \qquad 4Y = \frac{3}{4}$$

$$\Longrightarrow \qquad Y = \frac{3}{16}$$



Homework 3.3:

$K = 0.2$ this is a scalar with no units

$$10 = \frac{1}{0.5}\hat{t}$$

$$\implies \quad \hat{t} = \frac{1}{5}$$

$$N = \frac{0.1}{10^{-4}}\hat{N} = \frac{0.1}{10^{-4}} \cdot 0.0474711 = 47.4711$$

$$P = \frac{0.5}{0.1}\hat{P} = 5 \cdot 5.15248011 = 25.7624055$$