

MATH 3313

Cd W Sec 1.5

1) $\frac{dx}{dt} = x - t$ $x(0) = 1$ $b = 2$ $h = 0.5$

$$\begin{aligned} x(0.5) &= x(0) + \frac{dx}{dt}(0) 0.5 \\ &= x(0) + (x(0) - 0)(0.5) \\ &= 1 + (1 - 0)(0.5) = 1.5 \end{aligned}$$

$$\begin{aligned} x(1.0) &= x(0.5) + \frac{dx}{dt}(0.5) 0.5 \\ &= x(0.5) + (x(0.5) - 0.5)(0.5) \\ &= 1.5 + (1.5 - 0.5)(0.5) = 2.0 \end{aligned}$$

$$\begin{aligned} x(1.5) &= x(1.0) + (x(1.0) - 1.0) 0.5 \\ &= 2 + (2 - 1)(0.5) = 2.5 \end{aligned}$$

$$\begin{aligned} x(2.0) &= x(1.5) + (x(1.5) - 1.5)(0.5) \\ &= 2.5 + (2.5 - 1.5)(0.5) = 3.0 \end{aligned}$$

3) $\frac{dx}{dt} = -tx^2$ $x(0) = 1$ $b = 2$ $h = 1$

$$\begin{aligned} x(1) &= x(0) + \frac{dx}{dt}(0)(1) \\ &= x(0) + (-0)(1)^2(1) = 1 \end{aligned}$$

$$\begin{aligned} x(2) &= x(1) + (-1)1^2(1) \\ &= 1 - 1 = 0 \end{aligned}$$