

# Attendance Q3

$a_1 = 5^{\text{th}}$  digit of RUID, 1 (make it 1 if 0)

$a_2 = 1^{\text{st}}$  " " " , 1

$a_3 = 2^{\text{nd}}$  " " " , 7

solve  $a_1 y'' + a_2 y' + a_3 y = 0$   $y(0) = 0, y'(0) = 0$

$$y'' + y' + 7y = 0$$

$$\lambda^2 + \lambda + 7 = 0$$

$$\lambda = \frac{-1 \pm \sqrt{1 - 4(1)(7)}}{2}$$

$$y(t) = e^{at} (C_1 \cos(bt) + C_2 \sin(bt))$$

$$\lambda = \frac{-1 \pm \sqrt{-27}}{2}$$

$$y(t) = e^{-\frac{1}{2}t} \left( C_1 \cos\left(\frac{3\sqrt{3}}{2}t\right) + C_2 \sin\left(\frac{3\sqrt{3}}{2}t\right) \right)$$

$$y'(t) = -\frac{1}{2}C_1 e^{-\frac{1}{2}t} \cos\left(\frac{3\sqrt{3}}{2}t\right) - \frac{3\sqrt{3}}{2}C_1 e^{-\frac{1}{2}t} \sin\left(\frac{3\sqrt{3}}{2}t\right) + \frac{3\sqrt{3}}{2}C_2 e^{-\frac{1}{2}t} \cos\left(\frac{3\sqrt{3}}{2}t\right) - \frac{1}{2}C_2 e^{-\frac{1}{2}t} \sin\left(\frac{3\sqrt{3}}{2}t\right)$$

$$\lambda = \frac{-1 \pm 3i\sqrt{3}}{2}$$

$$y(0) = e^0 (C_1 \cos(0) + C_2 \sin(0)) = 0$$

$$C_1 = 0$$

$$y'(0) = -\frac{1}{2}C_2 e^0 \sin(0) + C_2 e^0 \frac{3\sqrt{3}}{2} \cos(0) = 0$$

$$\frac{3\sqrt{3}}{2} C_2 = 0$$

$$C_2 = 0$$

$y(t) = 0$