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[> #Nikita John, Attendance 3
[> #3: Solving diff eq. using Maple
#a1:=1, a2:=1, a3:=8
dsolve( {D(D(y))(t) - D(y)(t) + 8·y(t) = 0, y(0) = 0, D(y)(0) = 0}, y(t));
y(t) = 0
[>
```

**(1)**

P3

$$* y''(t) - y'(t) + 8y(t) = 0, \quad y(0) = 0, \quad y'(0) = 0$$

$$r^2 - r + 8 = 0$$

$$\frac{1 \pm \sqrt{1 - 4(8)(1)}}{2(1)} = \frac{1 \pm \sqrt{-31}}{2} = \frac{1 \pm \sqrt{31}i}{2}$$

$$y(t) = c_1 e^{1/2t} \cos\left(\frac{\sqrt{31}}{2}t\right) + c_2 e^{1/2t} \sin\left(\frac{\sqrt{31}}{2}t\right)$$

$$0 = c_1(1)(0) + c_2(1)(0) \Rightarrow c_1 = 0$$

$$y'(t) = \frac{1}{2}c_1 e^{1/2t} \cos\left(\frac{\sqrt{31}}{2}t\right) + \frac{\sqrt{31}}{2}c_1 e^{1/2t} \sin\left(\frac{\sqrt{31}}{2}t\right) + \frac{1}{2}c_2 e^{1/2t} \sin\left(\frac{\sqrt{31}}{2}t\right) + \frac{\sqrt{31}}{2}c_2 e^{1/2t} \cos\left(\frac{\sqrt{31}}{2}t\right)$$

$$0 = \frac{1}{2}(0)(1) + \frac{\sqrt{31}}{2}(0)(1)(0) + \frac{1}{2}c_2(1)(0) + \frac{\sqrt{31}}{2}c_2(1)(1)$$

$$0 = \frac{\sqrt{31}}{2}c_2 \Rightarrow c_2 = 0$$

$$y(t) = 0$$