MA22S3 Tutorial Sheet 7.[1]

25 November 2009

Useful facts:

- To solve the equation $a\ddot{y} + b\dot{y} + cy = 0$, with a, b and c constants, use an exponential substitution $y = \exp(\lambda t)$ and solve for λ. Usually this will give two solutions.

Questions

1. (2) Obtain the general solution to

$$\ddot{y} + \dot{y} - 2y = 0 \tag{1}$$

2. (2) Obtain the general solution to

$$\ddot{y} + 6\dot{y} + 8y = 0 \tag{2}$$

3. (2) Obtain the general solution to

$$2\ddot{y} + 5\dot{y} + 3y = 0 \tag{3}$$

4. (2) Obtain the solution to
$$\ddot{y} + 7\dot{y} + 6y = 0 \tag{4}$$

    with $y(0) = 2$ and $\dot{y}(2) = -1$.