Quiz 12

MA 262
Artur's Class

2014/12/04

Problem 1

Solve the following linear system, where ω is a constant.

$$x' = y \tag{1}$$
$$y' = -\omega^2 x. \tag{2}$$

Problem 2

Suppose $f(t)$ and $g(t)$ are arbitrary real valued functions on $(-\infty, \infty)$. What must be true about $f(t)$ or $g(t)$ so that the vector valued functions

$$\mathbf{x}_1(t) = \begin{pmatrix} f(t) \\ g(t) \end{pmatrix}, \quad \mathbf{x}_2(t) = \begin{pmatrix} f(t)+1 \\ g(t) \end{pmatrix},$$

are linearly independent?