

Module MA2C02: Hilary Term 2013.

Assignment III.

To be handed in by Wednesday 20th March, 2013.

Please include both name and student number on any work handed in.

1. Find the general solution of the differential equation

$$\frac{d^2y}{dx^2} - 12\frac{dy}{dx} + 7y = e^{2x} \cos 3x.$$

2. Express $\sin 4\theta$ and $\cos 5\theta$ by formulae involving $\sin \theta$ and $\cos \theta$ and their powers.
3. (a) What is the cosine of the angle between the vectors $(1, 1, 2)$ and $(1, -1, -2)$?

(b) Find the components of a non-zero vector orthogonal to the vectors $(2, 3, 4)$ and $(3, 4, 5)$.

(c) Find the equation of the plane in \mathbb{R}^3 passing through the points $(3, 0, 7)$, $(5, 1, 6)$ and $(6, 3, 8)$.