

# Linear Algebra & Differential Equations

## Quiz 5, Fall 2007

TAs: Patrick Rault and Melanie Ruiz

**NAME:**

**Circle One:**

Tues 8:50am	Tues 9:55am	Tues 1:20pm
Thurs 8:50am	Thurs 9:55am	Thurs 1:20pm

Complete each of the following problems. Show all work. Make sure to clearly label your answer. Any work that is crossed out will not be assessed. Any incorrect work will be assessed. Make sure that all work is legible.

1. Are the following functions linearly independent on all of  $\mathbb{R}$ ?

$$f(\theta) = \sin^4(\theta)$$

$$g(\theta) = 1 - 2 \cos(2\theta) + \cos^2(2\theta).$$

2. Solve the following second order initial value problem.

$$y'' - \frac{4}{3}y' + \frac{4}{9}y = 0$$

$$y(0) = \pi \text{ and}$$

$$y'(0) = \frac{2\pi}{3}$$