

Name: \_\_\_\_\_  
Differential Equations, Spring 2017

Quiz 10, April 28

You must show all your work to receive credit. Calculators are allowed.

**Problem 1:** (3 points)  $A$  is a  $3 \times 3$  matrix and  $\vec{v}_1, \vec{v}_2, \vec{v}_3$  are vectors such that

$$A\vec{v}_1 = -\vec{v}_1, \quad A\vec{v}_2 = 2\vec{v}_2, \quad A\vec{v}_3 = -4\vec{v}_3.$$

Find the solution of the IVP

$$\begin{aligned}\vec{x}' &= A\vec{x}, \\ \vec{x}(0) &= 7\vec{v}_1 + 8\vec{v}_2 + 9\vec{v}_3.\end{aligned}$$