

MATH 54 SPRING 2019: DISCUSSION 109/112 QUIZ#9

GSI: CHRISTOPHER EUR, DATE: 4/23/2019

STUDENT NAME: _____

Problem 1. Find a general solution to the differential equation

$$y''(x) + 4y(x) = \sin x - \cos x.$$

Problem 2. Verify by computing the Wronskian that

$$\mathbf{x}_1 = \begin{bmatrix} \cos t \\ 0 \\ 0 \end{bmatrix}, \mathbf{x}_2 = \begin{bmatrix} \sin t \\ \cos t \\ \cos t \end{bmatrix}, \mathbf{x}_3 = \begin{bmatrix} \cos t \\ \sin t \\ \cos t \end{bmatrix}$$

are linearly independent as vector functions on $(-\infty, \infty)$. Is the Wronskian nonzero for any value of t in the interval $(-\infty, \infty)$?