

**Quiz Eight**

**Lecture:**  8:30      **SI:**  Alex       Becca  
 9:30       Ashley       Jason  
 Avni       Matt

**No notes. Calculators are allowed.**

Write clearly and explain your reasoning.

1 (4 points) Suppose  $AX = B$ , where  $B = \begin{bmatrix} 2 \\ -2 \\ 1 \end{bmatrix}$  and  $A^{-1} = \begin{bmatrix} 1 & 0 & 2 \\ 2 & -1 & 1 \\ 0 & -2 & 3 \end{bmatrix}$ . Find  $X$ .

2 (4 points) The function  $y = 4x^2 + ax$  is a solution of the differential equation

$$xy' = 2y + x.$$

What is the constant  $a$ ? Verify that your function (with your  $a$ ) is a solution.

3 (5 points) Find the general solution to the differential equation

$$e^{3y}y' = x^3 - 5.$$

4 (7 points) Find the solution of  $y' = \frac{x^2}{y^2} - \frac{2}{x^2y^2}$  through the point  $(x, y) = (1, 1)$ .