

**Quiz Eight**

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

**No notes. Calculators are allowed.**

Write clearly and explain your reasoning.

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

2 (4 points) The function  $y = 3x^2 + ax$  is a solution of the differential equation

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

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

$$e^{2y}y' = x^4 + 7.$$

4 (7 points) Find the solution of  $y' = \frac{x^4}{y^4} - \frac{3}{x^4y^4}$  through the point  $(x, y) = (1, 1)$ .