

## Quiz 7 – 18 October 2019

**Instructions.** You have 15 minutes to complete this quiz. You may not use your calculator. You may not use any other materials (e.g., notes, homework, books).

Show all your work. To receive full credit, your solutions must be completely correct, sufficiently justified, and easy to follow.

Problem	Weight	Score
1	1	
2	1	
3	1	
4	1	
5	1	
Total		/ 50

For Problems 1-4, let

$$A = \begin{bmatrix} 2 & -3 & 1 \\ 0 & 1 & 4 \\ -1 & 5 & -2 \end{bmatrix} \quad B = \begin{bmatrix} 1 & 0 & 0 \\ -10 & 4 & 0 \\ 3 & -7 & 5 \end{bmatrix} \quad C = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 6 \\ 3 & 6 & 9 \end{bmatrix}$$

**Problem 1.** Find  $|A|$ .

- Most of you had the right idea here.
- Be careful with your arithmetic!

- Be careful with your notation!

- $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$  is not the same as  $\begin{vmatrix} 1 & 2 \\ 3 & 4 \end{vmatrix}$ .

- The first is a  $2 \times 2$  matrix, and the second is a scalar, because it is the determinant of a  $2 \times 2$  matrix.

**Problem 2.** Find  $|B|$ .

- Hint for a shortcut: try using Property VI from page 4 of Lesson 13.

**Problem 3.** Find  $|C|$ .

- Hint for a shortcut: try using Property V from page 4 of Lesson 13.

**Problem 4.** Is  $C$  invertible? Briefly explain.

- See Section 4 of Lesson 13.

**Problem 5.** Use Cramer's Rule to solve the system

$$\begin{aligned}x + 2y &= 3 \\2x + 7y &= 5\end{aligned}$$

- See Section 7 of Lesson 13.
- Also see Problem 4.6 from the textbook, assigned for homework.