

**Quiz 5 – 2 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	
6	1	
Total		/ 60

For this quiz, let

$$A = \begin{bmatrix} 1 & -3 & 2 \\ 4 & 0 & -1 \end{bmatrix} \quad B = \begin{bmatrix} -1 & 4 & 0 \\ 3 & -2 & 1 \end{bmatrix} \quad C = \begin{bmatrix} 4 & -1 \\ -2 & 0 \\ 1 & 2 \end{bmatrix} \quad D = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \quad E = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

**Problem 1.** Compute  $2A + B$ .

**Problem 2.** Compute  $AC$ .

- In general, most of you had the right idea.
- Be careful with your arithmetic!
- Note that you can use your answer to Problem 2 to answer Problem 3, using properties of transposes (see page 8 of Lesson 11).
- Also note that Problems 4 and 6 can be done by inspection, using properties of identity matrices and null matrices (see pages 6-7 of Lesson 11).

**Problem 3.** Compute  $C^T A^T$ .

For your convenience, here are the matrices defined on page 1:

$$A = \begin{bmatrix} 1 & -3 & 2 \\ 4 & 0 & -1 \end{bmatrix} \quad B = \begin{bmatrix} -1 & 4 & 0 \\ 3 & -2 & 1 \end{bmatrix} \quad C = \begin{bmatrix} 4 & -1 \\ -2 & 0 \\ 1 & 2 \end{bmatrix} \quad D = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \quad E = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

**Problem 4.** Compute  $BD$ .

**Problem 5.** Compute  $B^T$ .

**Problem 6.** Compute  $DCE$ . What size is  $DCE$ ?