

Math 10B with Professor Stankova

Quiz 12; Tuesday, 4/17/2018

Section #211; Time: 11 AM

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Name: \_\_\_\_\_

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Circle True or False or leave blank. (1 point for correct answer,  $-1$  for incorrect answer, 0 if left blank)

1. True    False    If two vectors are perpendicular to each other (they form an angle of  $90^\circ$ ), then their dot product is 0.
2. True    False    If we have found two different solutions to  $A\vec{x} = \vec{b}$ , then  $\det(A) = 0$ .

Show your work and justify your answers. Please circle or box your final answer.

3. (10 points) Let  $A = \begin{pmatrix} 1 & 3 & 4 \\ 0 & 2 & 1 \\ -1 & 1 & 0 \end{pmatrix}$ ,  $B = \begin{pmatrix} 7 & 2 \\ 3 & 1 \end{pmatrix}$ ,  $\vec{v} = \begin{pmatrix} -1 \\ 1 \end{pmatrix}$

(a) (2 points) Calculate  $B\vec{v}$ .

(b) (4 points) Find a solution to  $B \begin{pmatrix} x \\ y \end{pmatrix} = \vec{v}$ .

(c) (1 point) Is it unique? Why?

(d) (3 points) Calculate  $\det(A)$ .