

# ENG EK 103: Computational Linear Algebra: Lecture 2 Preparatory quiz

Fall 2019

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

Reading: Strang, Ch. 1.2, 1.3, 2.4

- Does the order of  $v$  and  $w$  in the inner product  $v \cdot w$  make any difference?
  - Yes,  $v \cdot w \neq w \cdot v$ .
  - Sometimes.
  - No,  $v \cdot w = w \cdot v$ .
  - Only if  $w \neq 0$ .
- What is the triangle inequality?
  - $\|v + w\| \leq \|v\| + \|w\|$ .
  - $\|v + w\| \geq \|v\| + \|w\|$ .
  - $|v \cdot w| \leq \|v\|\|w\|$
  - $|v \cdot w| \geq \|v\|\|w\|$
- Suppose three vectors  $u, v, w$  are independent. This means
  - The matrix formed by putting the vectors  $u, v, w$  into columns must be singular.
  - No combination except  $0u + 0v + 0w = 0$  gives  $b = 0$ .
  - The combination  $u + v + w$  gives  $b = 0$ .
  - The matrix formed by putting the vectors  $u, v, w$  into columns must be invertible.
- True or false: Matrix multiplication commutes (that is,  $AB = BA$  for every  $A, B$ ).
  - True.
  - False.
- The multiplication of two matrices,  $AB$  can be interpreted as
  - A matrix whose  $(i, j)$  entry is (row  $i$  of  $A$ )  $\cdot$  (column  $j$  of  $B$ ).
  - Matrix  $A$  times every column of  $B$ .
  - Every row of  $A$  times matrix  $B$ .
  - All of the above.