

# Break & Quiz

**Q 1.1:** What is the projection of  $[1 \ 2]^T$  onto  $[0 \ 1]^T$  ?

- A.  $[1 \ 2]^T$
- B.  $[-1 \ 1]^T$
- C.  $[0 \ 0]^T$
- D.  $[0 \ 2]^T$

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**Q 1.2:** We wish to run PCA on 10-dimensional data in order to produce  $r$ -dimensional representations. Which is the most accurate?

- A.  $r \leq 3$
- B.  $r < 10$
- C.  $r \leq 10$
- D.  $r \leq 20$

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**Q 2.1:** You see samples of  $X$  given by  $[0,1,1,2,2,0,1,2]$ . Empirically estimate  $E[X^2]$

- A.  $9/8$
- B.  $15/8$
- C.  $1.5$
- D. There aren't enough samples to estimate  $E[X^2]$

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**Q 2.2:** You are empirically estimating  $P(X)$  for some random variable  $X$  that takes on 100 values. You see 50 samples. How many of your  $P(X=a)$  estimates might be 0?

- A. None.
- B. Between 5 and 50, exclusive.
- C. Between 50 and 100, inclusive.
- D. Between 50 and 99, inclusive.