MATH 1554 Linear Algebra: Linear independence

1. What is the definition of linear independence?

A. A set of vectors is linearly independent if no vector in the set can be expressed as a linear combination of the other vectors in the set.

B. A set of vectors is linearly independent if the only way to express a vector in the set as a linear combination of the other vectors in the set is the trivial way.

C. A set of vectors is linearly independent if the vectors in the set are not all parallel.

D. A set of vectors is linearly independent if the vectors in the set are not all perpendicular.

2. Which of the following sets of vectors is linearly independent?

A. {(1,2,3), (4,5,6), (7,8,9)}

B. {(1,0,0), (0,1,0), (0,0,1)}

C. {(1,1,1), (2,2,2), (3,3,3)}

D. {(1,2,3), (2,4,6), (3,6,9)}

3. Which of the following sets of vectors is linearly dependent?

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C. {(1,1,1), (2,2,2), (3,3,3)}

D. {(1,2,3), (2,4,6), (3,6,9)}

Answer Key: 1-A, 2-B, 3-C, 4-D, 5-A, 6-B, 7-C, 8-D, 9-A, 10-B