MATH 3406 Advanced Linear Algebra: Eigenvectors and eigenvalues

1. What is an eigenvector of a matrix A?

A) A vector that is not changed by multiplication by A

B) A vector that is changed by multiplication by A

C) A vector that is perpendicular to all other vectors in A

D) A vector that is parallel to all other vectors in A

2. What is an eigenvalue of a matrix A?

A) A number that is not changed by multiplication by A

B) A number that is changed by multiplication by A

C) A number that is perpendicular to all other numbers in A

D) A number that is parallel to all other numbers in A

3. If A is an n x n matrix, how many eigenvectors does A have?

A) 0

B) 1

C) n

D) n^2

4. If A is an n x n matrix, how many eigenvalues does A have?

A) 0

B) 1

C) n

D) n^2

5. Which of the following matrices has an eigenvector of (1,2)?

A)

B)

C)

D)

6. Which of the following matrices has an eigenvalue of 3?

A)

B)

C)

D)

7. Which of the following matrices has an eigenvector of (1,1)?

A)

B)

C)

D)

8. Which of the following matrices has an eigenvalue of -1?

A)

B)

C)

D)

9. Which of the following matrices has an eigenvector of (1,0)?

A)

B)

C)

D)

10. Which of the following matrices has an eigenvalue of 0?

A)

B)

C)

D)

Answer Key:

1. A

2. A

3. C

4. C

5. D

6. A

7. B

8. D

9. A

10. B