Math 2318 – Linear Algebra ***Exam* 3** ***Review***

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1. Find the characteristic equation, eigenvalues, and eigenvectors of 
2. Find the characteristic equation, eigenvalues, and eigenvectors of 
3. Find the eigenvalues, and eigenvectors of 
4. Find the characteristic equation, eigenvalues, and eigenvectors of 
5. Find the characteristic equation, eigenvalues, and eigenvectors of 
6. Find a matrix *P* that diagonalizes 
7. Let , determine when *A* is diagonalizable, not diagonalizable. (*Hint: discriminant of the characteristic equation*)
8. Show that and  are not similar matrices
9. Let  be the Euclidean inner product on , and let , , and . Verify the following for the weighted Euclidean inner product
10.  *b)* 
11. Which of the following form orthonormal sets?
12.  in 
13. 
14. Use the Gram-Schmidt process to find an orthonormal basis for the subspaces of .
15. 
16. 
17. 
18. 
19. Find the ***QR***-decomposition of

*a*)  *b*) 

1. Determine if the matrix is orthogonal. For those that is orthogonal find the inverse
2. 
3. 
4. 
5. Show that the matrix  is not diagonalizable

***Solution***

1.   
2.   
3.   
4.   
5.   
6. 
7. 
8. 
9. 
10. 
11. 







1. 



1. 

  
