1. Find a basis of such that the -matrix of the given linear transformation T is diagonal.

Reflection T about the line in spanned by .

1. Which of the subsets of given below are subspaces of ? Find the basis for those that are subspaces.
2. {p(t):p(0)=2}
3. {p(t):p(2)=0}
4. {p(t):p’(1)=p(2)}
5. {p(t):dt=0}
6. {p(t):p(-t)=-p(t), for all t}
7. Which of the subsets of given below are subspaces of ?
8. The invertible 33 matrices
9. The diagonal 33 matrices
10. The upper triangular 33 matrices
11. The 33 matrices whose entries are all greater than or equal to zero
12. The 33 matrices A such that vector is in the kernel of A
13. The 33 matrices in reduced row-echelon form.
14. Find a basis for the spaces and determine its dimension.
15. The space of all 2X2 matrices A such that A=
16. Find all the solutions of the differential equation
17. Make up a second-order linear DE whose solution space is spanned by the functions and .
18. Find out which of the transformations below are linear. For those that are linear, determine whether they are isomorphisms.
19. T(M)=M+I2 from to
20. T(M)=7M from to
21. T(M)=det(M) from to
22. T(M)=Mto
23. T(M)=S-1MS, where S=, from to
24. T(M)=PMP-1, where P= , from to
25. T(M)=PMQ, where P= , and Q= , from to
26. T(c)= c from to
27. T(M)=M- M from to