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MATRIC NO: 18/SCI01/082

**Solution**

1. Linear transformation is a mapping T from V to W if T(u+v)= T(u) + T(v) for every pair of vectors u and from V and T(αV)=αT(v) for every vector v and scalar α from R.

**Example**

1. A= 4 3 -1

 2 0 5

 1 -1 6

Given vector X to be (-1, 2, 5)

 T(x)=A(x) = 4 3 -1 -1

 2 0 5 2

 1 -1 6 5

= -1 4 +2 3 +5 -1

 2 0 5

 1 -1 6

= -4 6 -5

 -2 + 0 + 25

 -1 -2 30

T(x)= -**3 hence, the transformation of -1**

 **23 2**

 **27 5**

1. B= 3 7 1

 0 2 4

 4 5 -3

Given X to be (3,5,1)

T(x)= B(x) = 3 7 1 3

 0 2 4 5

 4 5 -3 1

= 3 3 +5 7 +1 1

 0 2 4

 4 5 -3

 = 9 35 1

 0 + 10 + 4

 12 25 -3

= **45 3**

 **14 Hence, the transformation of 5**

 **34 1**

1. C= 2 -3 5

 -1 4 1

 6 8 2

Given X to be (4,5,-1)

T(x)= C(x)= 2 -3 5 4

 -1 4 1 5

 6 8 2 -1

= 4 2 5 -3 -1 5

 -1 + 4 + 1

 6 8 2

= 8 -15 -5

 -4 + 20 + -1

 24 45 -2

**= -12**

 **15 Hence, transformation of 4**

 **62 5**

 **-1**

1. D= 4 5 -3

 2 5 1

 3 2 -1

Given X to be (9,-2,0)

T(x)=D(x)= 4 5 -3 9

 2 5 1 -2

 3 2 -1 0

= 9 4 -2 5 0 -3

 2 + 5 + 1

 3 2 -1

= 36 10 0

 18 + -10 + 0

 27 -4 0

**= 26**

 **8 Hence, the transformation of 9**

 **23 -2**

 **0**

1. E= 1 -3 6

 4 0 2

 8 5 1

Given X to be (-1, 2,3)

1. T(x)=E(x) =1 -3 6 -1

 4 0 2 2

 8 5 13

 = -1 1 2 - 3 3 6

 4 + 0 + 2

 8 5 1

= -1 -6 18

 -4 + 0 + 6

 -8 10 3

**= 11**

 **2 Hence, the transformation of -1**

 **5 2**

 **3**