LetL:$R_2 \rightarrow R_2$be a linear operator such that L(1,2) = (−2,3) and L(1,−1) = (5,2).Find the value of L(7,11).

Let (7,11) be the linear combination of (1,2) and (1,-1):

a(1,2)+b(1,-1)=(7,11)

then we obtain this system of equation:

a + b = 7
2a – b = 11

Thus

a = 6
b = 1

Given that L is linear operator:

L(7,11)= L(6(1,2)+1(1,-1))
= L(6(1,2)) +L(1(1,-1))
= 6 * L(1,2) + 1 * L(1,-1)
= 6 * (-2, 3) + 1 * (5, 2)
= (-12, 18) + (5, 2)
= (-7, 20)