

Ex: Compute each of the following sums using vectors in the complex plane:

a) $z = (1 + j3) + (-2 + j) + (1 - j3)$

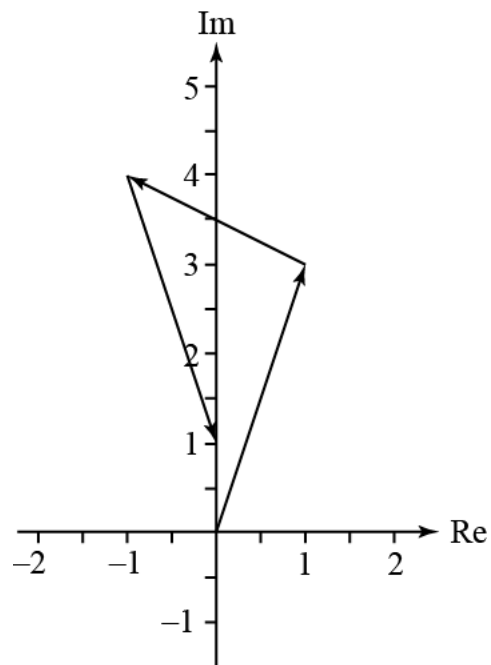
b) $z = \frac{1+j}{2} + \frac{1-j}{2}$

c) $z = (5 + j12) + (-24 + j10)$

d) $z = (1 + j0) + (-1 + j\sqrt{3}) + (-1 - j\sqrt{3}) + (1 + j0)$

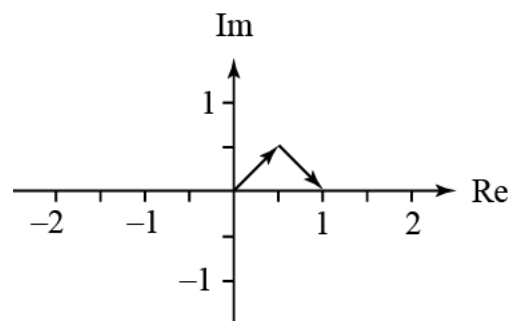
SOL'N:

a) Place the vectors end-to-end to calculate the sum.



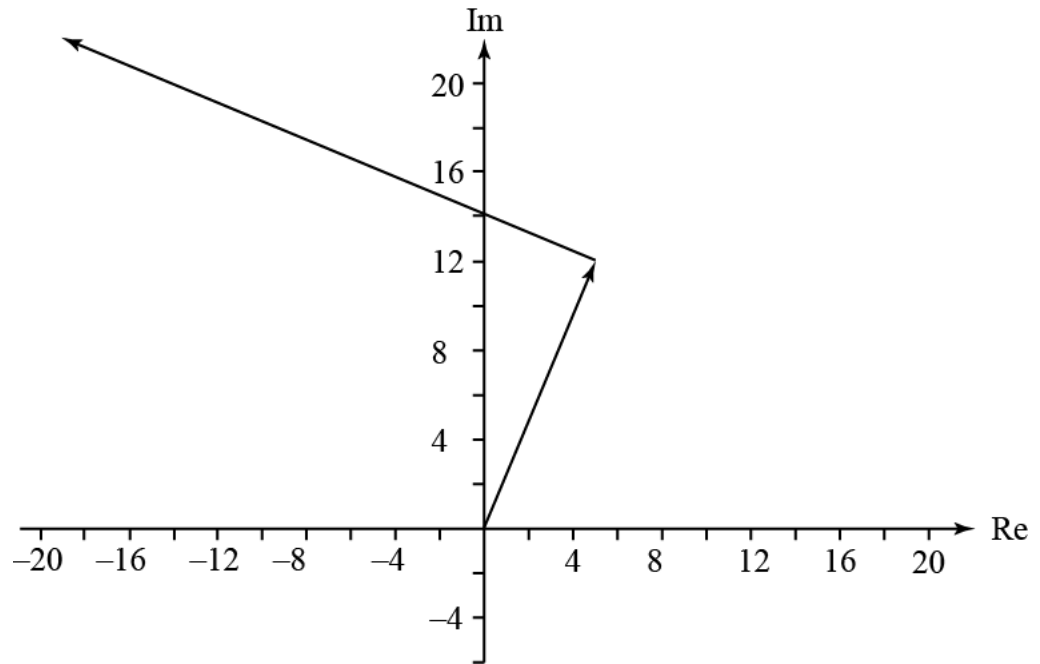
$$z = (1 + j3) + (-2 + j) + (1 - j3) = j$$

b)



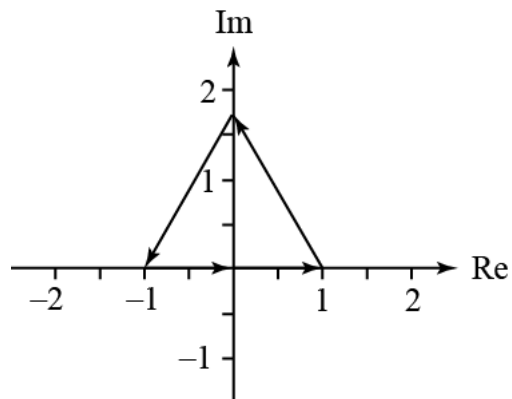
$$z = \frac{1+j}{2} + \frac{1-j}{2} = 1$$

c)



$$z = (5 + j12) + (-24 + j10) = -19 + j22$$

d)



$$z = (1 + j0) + (-1 + j\sqrt{3}) + (-1 - j\sqrt{3}) + (1 + j0) = 0$$