

Exercise 7

Use the associative law for addition and the distributive law to show that

$$z(z_1 + z_2 + z_3) = zz_1 + zz_2 + zz_3.$$

Solution

The terms in parentheses can be grouped however we like as a result of the associative law for addition.

$$z(z_1 + z_2 + z_3) = z[(z_1 + z_2) + z_3]$$

Apply the distributive law here.

$$= z(z_1 + z_2) + zz_3$$

Apply the distributive law once more.

$$= zz_1 + zz_2 + zz_3$$