

Exercise 3

Show that $(1 + z)^2 = 1 + 2z + z^2$.

Solution

Use the distributive law repeatedly.

$$\begin{aligned}(1 + z)^2 &= (1 + z)(1 + z) \\ &= 1(1 + z) + z(1 + z) \\ &= 1(1) + 1(z) + z(1) + z(z) \\ &= 1 + z + z + z^2 \\ &= 1 + 2z + z^2\end{aligned}$$