

$$\begin{aligned}
 \mathbf{5.9} \quad z^n &= \left(r (\cos(\varphi) + i \sin(\varphi)) \right)^n = \underbrace{r (\cos(\varphi) + i \sin(\varphi)) \cdot \dots \cdot r (\cos(\varphi) + i \sin(\varphi))}_{n \text{ fois}} = \\
 &\underbrace{r \cdot \dots \cdot r}_{n \text{ fois}} \underbrace{(\cos(\varphi + \dots + \varphi))}_{n \text{ fois}} + i \underbrace{\sin(\varphi + \dots + \varphi)}_{n \text{ fois}} = r^n (\cos(n\varphi) + i \sin(n\varphi))
 \end{aligned}$$