

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