

**Solution**

$$\begin{aligned}(a+b)^3 &= (a+b)(a+b)(a+b) = (a+b)\underbrace{(a^2 + 2ab + b^2)}_{=(a+b)(a+b)} \\ &= a \cdot (a^2 + 2ab + b^2) + b \cdot (a^2 + 2ab + b^2) = (a^3 + 2a^2b + ab^2) + (a^2b + 2ab^2 + b^3) \\ &= a^3 + 3a^2b + 3ab^2 + b^3\end{aligned}$$