

Product Rule

Example 1 $4^2 \times 4^3$

$$\begin{aligned} 4^2 &\times 4^3 \\ (4 \times 4) &\times (4 \times 4 \times 4) = 4 \times 4 \times 4 \times 4 \times 4 \\ &= 4^5 \end{aligned}$$

Example 2 $7^5 \times 7^3$

$$\begin{aligned} 7^5 &\times 7^3 \\ (7 \times 7 \times 7 \times 7 \times 7) &\times (7 \times 7 \times 7) = 7 \times 7 \times 7 \times 7 \times 7 \times 7 \times 7 \times 7 \\ &= 7^8 \end{aligned}$$

Try $3^{17} \times 3^8$

When you multiply exponentials with the SAME base, you add the exponents

$$A^m A^n = A^{m+n}$$