Worked answers | Index laws

Powers of powers

6 questions | 13 marks

Equivalent correct methods earn the corresponding marks.

1. Write $(5^2)^3$ as one power. [2 marks]

$2 \times 3 = 6$.

Answer: 5^6

2. Write $(3^4)^2$ as one power. [2 marks]

$4 \times 2 = 8$.

Answer: 3^8

3. Write $(10^3)^2$ as one power. [2 marks]

$3 \times 2 = 6$.

Answer: 10^6

4. Evaluate $(2^2)^3$. [2 marks]

$2^{2 \times 3} = 2^6 = 64$.

Answer: 64

5. Evaluate $((-2)^3)^2$. [2 marks]

$(-2)^{3 \times 2} = (-2)^6 = 64$.

Answer: 64

6. Find n if $(4^2)^n = 4^8$. [3 marks]

$2n = 8$, so $n = 4$.

Answer: 4