Worked answers | Index laws

Zero index

6 questions | 11 marks

Equivalent correct methods earn the corresponding marks.

1. Evaluate 7^0. [1 mark]

The base 7 is nonzero.

Answer: 1

2. Evaluate $(-8)^0$. [1 mark]

The base is the nonzero bracketed number -8.

Answer: 1

3. Evaluate -8^0. [2 marks]

$8^0 = 1$, then apply the outside minus sign.

Answer: -1

4. Use a quotient to explain $6^0 = 1$. [2 marks]

A nonzero number divided by itself is 1.

Answer: $6^3 \div 6^3 = 1 = 6^{3-3} = 6^0$.

5. Evaluate $3^0 + 4^2$. [2 marks]

$1 + 16 = 17$.

Answer: 17

6. A student uses $a^0 = 1$ to claim $0^0 = 1$. Is this a valid use of the rule? Explain. [3 marks]

The quotient proof would divide zero by zero when the base is zero.

Answer: No. The rule requires a nonzero base.