Integer and fractional index laws

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Evaluate 2^{-3}. [2 marks]

$2^{-3} = 1/2^3 = 1/8$.

Answer: 1/8

2. Evaluate $32^{2/5}$. [2 marks]

$\sqrt[5]{32} = 2$, then $2^2 = 4$.

Answer: 4

3. Evaluate $16^{-3/4}$. [2 marks]

$\sqrt[4]{16} = 2$; cube to get 8 and invert.

Answer: 1/8

4. Simplify a^4a^3/a^2 for $a \neq 0$. [2 marks]

The exponent is $4 + 3 - 2 = 5$.

Answer: a^5

5. Simplify $(16x^4)^{3/4}$ for $x > 0$. [3 marks]

$16^{3/4} = 8$; $4(3/4) = 3$.

Answer: $8x^3$

6. Check the claim $(9 + 16)^{1/2} = 9^{1/2} + 16^{1/2}$ and explain the error. [3 marks]

$\sqrt{25} = 5$ while $\sqrt{9} + \sqrt{16} = 3 + 4 = 7$.

A product power law does not apply to addition.

Answer: False: the sides are 5 and 7.