Zero/negative powers and reciprocals

6 questions | 11 marks

Equivalent correct methods earn the corresponding marks.

1. Evaluate 9^0. [1 mark]

Any non-zero base raised to zero is 1.

Answer: 1

2. Write 4^{-2} as a fraction. [2 marks]

$4^{-2} = \frac{1}{4^2} = \frac{1}{16}$.

Answer: $\frac{1}{16}$

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

$(-3)^{-2} = \frac{1}{(-3)^2} = \frac{1}{9}$.

Answer: $\frac{1}{9}$

4. Write 0.000001 as a power of 10. [2 marks]

$0.000001 = \frac{1}{1000000} = \frac{1}{10^6} = 10^{-6}$.

Answer: 10^{-6}

5. Evaluate $2^3 \times 2^{-5}$. [2 marks]

Add exponents: $3 + (-5) = -2$.

$2^{-2} = \frac{1}{4}$.

Answer: $\frac{1}{4}$

6. Explain why 0^{-2} is not defined. [2 marks]

0^{-2} would mean $\frac{1}{0^2} = \frac{1}{0}$.

Division by zero is not defined.

Answer: It would require division by zero.