Negative Exponents Worksheet Answer Key PDF

Negative Exponents Worksheet Answer Key PDF

Disclaimer: The negative exponents worksheet answer key pdf was generated with the help of StudyBlaze AI. Please be aware that AI can make mistakes. Please consult your teacher if you're unsure about your solution or think there might have been a mistake. Or reach out directly to the StudyBlaze team at max@studyblaze.io.

Part 1: Foundational Knowledge

What is the result of \(2^{-3} \)?

undefined. 8

undefined. \(\frac{1}{8}\) ✓

undefined. -8

undefined. \(\frac{1}{2}\)

The result of \(2^{-3} \) is \(\frac{1}{8} \).

What is the result of \(2^{-3} \)?

undefined. 8

undefined. \(\frac{1}{8} \) ✓

undefined. -8

undefined. \(\frac{1}{2} \)

The result is \(\frac{1}{8} \).

What is the result of \(2^{-3} \)?

undefined. 8

undefined. \(\frac{1}{8} \) ✓

undefined. -8

undefined. \(\frac{1}{2} \)

The result is \(\frac{1}{8} \).

Which of the following expressions are equivalent to \(x^{-4} \)? (Select all that apply)

undefined. \(\frac{1}{x^4}\) ✓
undefined. x^4
undefined. \(\frac{1}{x^{-4}}\) ✓
undefined. \(\frac{1}{x^3}\)

The equivalent expressions are \(\frac{1}{x^4} \) and \(\frac{1}{x^{-4}} \).

Which of the following expressions are equivalent to \(x^{-4} \)? (Select all that apply)

undefined. \(\frac{1}{x^4} \) ✓
undefined. x^4
undefined. \(\frac{1}{x^{-4}} \)
undefined. \(\frac{1}{x^3} \)

The correct answers are \(\frac{1}{x^4} \) and \(\frac{1}{x^{-4}} \).

Which of the following expressions are equivalent to \(x^{-4} \)? (Select all that apply)

undefined. \(\frac{1}{x^4} \) ✓
undefined. x^4
undefined. \(\frac{1}{x^{-4}} \) ✓
undefined. \(\frac{1}{x^3} \)

The correct answers are \(\frac{1}{x^4} \) and \(\frac{1}{x^{-4}} \).

Explain in your own words what a negative exponent represents in a mathematical expression.

A negative exponent indicates the reciprocal of the base raised to the positive exponent.

Explain in your own words what a negative exponent represents in a mathematical expression.

A negative exponent indicates the reciprocal of the base raised to the positive exponent.

Explain in your own words what a negative exponent represents in a mathematical expression.

A negative exponent indicates the reciprocal of the base raised to the positive exponent.

Convert the following expressions with negative exponents to positive exponents:

1. a) \(7^{-2} \)
\(\frac{1}{49} \)

2. b) \(m^{-5} \)
\(\frac{1}{m^5} \)

The conversions are \(7^{-2} = \frac{1}{49} \) and \(m^{-5} = \frac{1}{m^5} \).

Convert the following expressions with negative exponents to positive exponents:

1. a) 7^{-2}
\(\frac{1}{7^2} \)

2. b) m^{-5}
\(\frac{1}{m^5} \)

The expressions should be converted to \(\frac{1}{7^2} \) and \(\frac{1}{m^5} \).

Convert the following expressions with negative exponents to positive exponents:

1. a) 7^{-2}
\(\frac{1}{7^2} \)

2. b) m^{-5}
\(\frac{1}{m^5} \)

The expressions should be rewritten as \(\frac{1}{7^2} \) and \(\frac{1}{m^5} \).

Which rule is applied when simplifying \(a^{-m} \times a^n \)?

undefined. Add the exponents
undefined. Subtract the exponents ✓
undefined. Multiply the exponents
undefined. Divide the exponents

The rule applied is to subtract the exponents.

Which rule is applied when simplifying \(a^{-m} \times a^n \)?

undefined. Add the exponents

undefined. Subtract the exponents ✓
undefined. Multiply the exponents
undefined. Divide the exponents

The correct rule is to subtract the exponents.

Which rule is applied when simplifying \(a^{-m} \times a^n \)?

undefined. Add the exponents
undefined. Subtract the exponents ✓
undefined. Multiply the exponents
undefined. Divide the exponents

The correct rule is to subtract the exponents.

Part 2: Understanding Concepts

If \(3^{-x} = \frac{1}{27} \), what is the value of \(x \)?

undefined. 3 ✓
undefined. -3
undefined. 9
undefined. -9

The value of \(x \) is 3.

If \(3^{-x} = \frac{1}{27} \), what is the value of \(x \)?

undefined. 3 ✓
undefined. -3
undefined. 9
undefined. -9

The value of \(x \) is 3.

If \(3^{-x} = \frac{1}{27} \), what is the value of \(x \)?

undefined. 3 ✓

undefined. -3

undefined. 9

undefined. -9

The value of \(x \) is 3.

Which of the following statements are true about the expression \(\frac{1}{a^{-n}} \)? (Select all that apply)

undefined. It is equivalent to \(a^n \) ✓

undefined. It simplifies to \(a^{-n} \)

undefined. It represents a reciprocal ✓

undefined. It is equivalent to \(\frac{1}{a^n} \) ✓

The true statements are that it is equivalent to \(a^n \) and represents a reciprocal.

Which of the following statements are true about the expression \(\frac{1}{a^{-n}} \)? (Select all that apply)

undefined. It is equivalent to \(a^n \) ✓

undefined. It simplifies to \(a^{-n} \)

undefined. It represents a reciprocal ✓

undefined. It is equivalent to \(\frac{1}{a^n} \) ✓

The true statements are that it is equivalent to \(a^n \) and represents a reciprocal.

Which of the following statements are true about the expression \(\frac{1}{a^{-n}} \)? (Select all that apply)

undefined. It is equivalent to \(a^n \) ✓

undefined. It simplifies to \(a^{-n} \)

undefined. It represents a reciprocal ✓

undefined. It is equivalent to \(\frac{1}{a^n} \) ✓

The true statements are that it is equivalent to \(a^n \) and represents a reciprocal.

Describe how the zero exponent rule applies to the expression \(b^0 \).

The zero exponent rule states that any non-zero number raised to the power of zero equals 1.

Describe how the zero exponent rule applies to the expression \(b^0 \).

The zero exponent rule states that any non-zero number raised to the power of zero equals one.

Describe how the zero exponent rule applies to the expression \(b^0 \).

The zero exponent rule states that any non-zero number raised to the power of zero equals one.

Part 3: Applying Knowledge

Simplify the expression \(\frac{2^{-3} \times 3^2}{6^{-1}} \).

undefined. \(\frac{1}{36} \)
undefined. 36
undefined. \(\frac{1}{4} \)
undefined. 4 ✓

The simplified expression is 4.

Simplify the expression \(\frac{2^{-3} \times 3^2}{6^{-1}} \).

undefined. \(\frac{1}{36}\)
undefined. 36
undefined. \(\frac{1}{4}\)
undefined. 4 ✓

The simplified expression is 4.

Simplify the expression \(\frac{2^{-3} \times 3^2}{6^{-1}} \).

undefined. \(\frac{1}{36} \)
undefined. 36
undefined. \(\frac{1}{4} \)
undefined. 4 ✓

The simplified expression is 4.

Which of the following expressions simplify to 1? (Select all that apply)

undefined. (5^{-1} \times 5) ✓
undefined. 10^0 ✓
undefined. \(\frac{4^{-2}}{4^{-2}} \) ✓
undefined. 2^{-3} \times 2^3 ✓

The correct answers are \((5^{-1} \times 5) \), \(10^0 \), and \(2^{-3} \times 2^3 \).

Which of the following expressions simplify to 1? (Select all that apply)

undefined. (5^{-1} \times 5) ✓
undefined. 10^0 ✓
undefined. \(\frac{4^{-2}}{4^{-2}}\) ✓
undefined. 2^{-3} \times 2^3

The expressions that simplify to 1 are \((5^{-1} \times 5) \), \(10^0 \), and \(\frac{4^{-2}}{4^{-2}} \).

Which of the following expressions simplify to 1? (Select all that apply)

undefined. (5^{-1} \times 5) ✓
undefined. 10^0 ✓
undefined. \(\frac{4^{-2}}{4^{-2}} \) ✓
undefined. 2^{-3} \times 2^3 ✓

The expressions that simplify to 1 are \((5^{-1} \times 5) \), \(10^0 \), and \(2^{-3} \times 2^3 \).

Solve for \(x \) in the equation \(4^{-x} = \frac{1}{16} \).

The solution for \(x \) is 2.

Solve for \(x \) in the equation \(4^{-x} = \frac{1}{16} \).

The solution for \(x \) is 2.

Solve for \(x \) in the equation \(4^{-x} = \frac{1}{16} \).

The solution for \(x \) is 2.

Part 4: Analyzing Relationships

Analyze the expression \(\frac{x^{-3} \times y^2}{z^{-1}} \) and choose the correct simplified form.

undefined. \(\frac{y^2}{x^3 \times z} \) ✓
undefined. x^3 \times y^2 \times z
undefined. \(\frac{z \times y^2}{x^3} \)
undefined. x^{-3} \times y^2 \times z^{-1}

The correct simplified form is \(\frac{y^2}{x^3 \times z} \).

Analyze the expression \(\frac{x^{-3} \times y^2}{z^{-1}} \) and choose the correct simplified form.

undefined. \(\frac{y^2}{x^3 \times z}\) ✓
undefined. x^3 \times y^2 \times z
undefined. \(\frac{z \times y^2}{x^3}\)
undefined. x^{-3} \times y^2 \times z^{-1}

The correct simplified form is \(\frac{y^2}{x^3 \times z} \).

Analyze the expression \(\frac{x^{-3} \times y^2}{z^{-1}} \) and choose the correct simplified form.

undefined. \(\frac{y^2}{x^3 \times z} \) ✓
undefined. x^3 \times y^2 \times z
undefined. \(\frac{z \times y^2}{x^3} \)
undefined. x^{-3} \times y^2 \times z^{-1}

The correct simplified form is \(\frac{y^2}{x^3 \times z} \).

Consider the expression \(a^{-2} \times b^0 \times c^3 \). Which of the following are true? (Select all that apply)

undefined. The expression simplifies to \(\frac{c^3}{a^2} \) ✓

undefined. \(b^0 \) equals 1 ✓

undefined. The expression can be rewritten as \(a^2 \times c^3 \)

undefined. \(a^{-2} \) is equivalent to \(\frac{1}{a^2} \) ✓

The true statements are that the expression simplifies to \(\frac{c^3}{a^2} \) and \(b^0 \) equals 1.

Consider the expression \(a^{-2} \times b^0 \times c^3 \). Which of the following are true? (Select all that apply)

undefined. The expression simplifies to \(\frac{c^3}{a^2} \) ✓

undefined. \(b^0 \) equals 1 ✓

undefined. The expression can be rewritten as \(a^2 \times c^3 \)

undefined. \(a^{-2} \) is equivalent to \(\frac{1}{a^2} \) ✓

The true statements are that the expression simplifies to \(\frac{c^3}{a^2} \), \(b^0 \) equals 1, and \(a^{-2} \) is equivalent to \(\frac{1}{a^2} \).

Consider the expression \(a^{-2} \times b^0 \times c^3 \). Which of the following are true? (Select all that apply)

undefined. The expression simplifies to \(\frac{c^3}{a^2} \) ✓

undefined. \(b^0 \) equals 1 ✓

undefined. The expression can be rewritten as \(a^2 \times c^3 \)

undefined. \(a^{-2} \) is equivalent to \(\frac{1}{a^2} \) ✓

The true statements are that the expression simplifies to \(\frac{c^3}{a^2} \), \(b^0 \) equals 1, and \(a^{-2} \) is equivalent to \(\frac{1}{a^2} \).

Break down the steps to simplify the expression \(\frac{m^{-1} \times n^2}{ p^{-3}} \).

To simplify, convert negative exponents to positive and then simplify the fraction.

Break down the steps to simplify the expression \(\frac{m^{-1} \times n^2}{ p^{-3}} \).

The steps involve converting negative exponents to positive and simplifying the expression.

Break down the steps to simplify the expression \(\frac{m^{-1} \times n^2}{ p^{-3}} \).

The steps involve converting negative exponents to positive and simplifying the fraction.

Part 5: Synthesis and Reflection

Create an expression using negative exponents that simplifies to \(\frac{1}{8} \). Which of the following could be your expression? (Select all that apply)

undefined. 2^{-3} ✓

undefined. 4^{-1.5} ✓

undefined. 8^{-1} ✓

undefined. 16^{-0.75}

The expressions that simplify to \(\frac{1}{8} \) are \(2^{-3} \), \(4^{-1.5} \), and \(8^{-1} \).

Reflect on the use of negative exponents in scientific notation. How do they help in representing very small numbers? Provide an example.

Negative exponents in scientific notation represent very small numbers by indicating the reciprocal of a power of ten.

Reflect on the use of negative exponents in scientific notation. How do they help in representing very small numbers? Provide an example.

Negative exponents in scientific notation represent very small numbers by indicating the reciprocal of the base raised to a positive exponent.