

Negative Exponents

Negative Power Rule: $A^{-m} = \frac{1}{A^m}$

A number raised to a negative exponent is one over that number with a positive exponent.

Example: Simplify $\frac{4^5}{4^{11}}$ in exponential notation.

$$\begin{aligned}\frac{4^5}{4^{11}} &= 4^{5-11}, \\ &= 4^{-6}, \\ &= \frac{1}{4^6}.\end{aligned}$$

Simplify the following expressions in exponential notation.

1. $\frac{6^2}{6^7}$

2. $\frac{12^0}{12^4}$

3. $\frac{48^3}{48^5}$

4. $\frac{8}{2^6}$

5. $\frac{8^7}{8^8}$

6. $\frac{3}{3^{10}}$

Write the following in fractional form using a positive exponent.

1. 6^{-2}

2. 12^{-4}

3. $8^{-5} \times 8^3$

4. 2^{-6}

5. $(8^{-2})^3$

6. $3^8 \div 3^{10}$

7. 25^{-13}

8. $11^5 \div 11^9$

9. $(4^4)^{-3}$

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Simplify the following expressions in exponential notation.

1. $4^6 \div 4^{10}$

2. $\frac{7^2}{7^5}$

3. $11^8 \div 11^{10}$

4. $\frac{3}{3^5}$

5. $11^4 \div 11^2$

6. $3^2 \div 3^8$

Write the following in fractional form using a positive exponent.

1. 15^{-6}

2. $(6^{-})^3$

3. $8^8 \div 8^3$

4. $6^{-3} \times 6^2$

5. 4^{-2}

6. $8^8 \div 8^{-2}$

7. 10^{-7}

8. 10^{-3}

9. $(5^{-3})^3$

10. $4^6 \div 4^8$

11. $3^{-4} \times 3^3$

12. 9^{-5}

13. $6^{-4} \times 6^6$

14. $6^9 \div 6^3$

15. $3^{-3} \times 3^3$

16. $10 \div 10^4$

17. $5^{-4} \times 5^6$

18. 4^{-8}

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Simplify the following expressions in exponential notation.

1. $6^6 \div 6^8$

2. $2 \div 2^5$

3. $10^5 \div 10^3$

4. $8^4 \div 8^7$

5. $12^4 \div 12^5$

6. $8^5 \div 8^{10}$

Write the following in fractional form using a positive exponent.

1. $2^8 \div 2^3$

2. $(7^{-3})^2$

3. $(7^{-2})^2$

4. $7^{-4} \times 7^4$

5. 12^{-5}

6. $7^{-3} \times 7^2$

7. $6^{-6} \times 6^4$

8. $10^{-6} \times 10^3$

9. 4^{-2}

10. $5^{-7} \times 5^2$

11. 8^{-7}

12. $(2^{-3})^4$

13. $(8^{-2})^3$

14. $10^{-8} \times 10^3$

15. $9^{-8} \times 9^5$

16. $(8^{-2})^2$

17. $8^8 \div 8^2$

18. 7^{-6}

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Simplify the following expressions in exponential notation.

1. $8^{10} \div 8^{12}$

2. $9 \div 9^6$

3. $6^4 \div 6^5$

4. $2 \div 2^3$

5. $3^5 \div 3^7$

6. $11^5 \div 11^8$

Write the following in fractional form using a positive exponent.

1. 5^{-6}

2. $11^{-6} \times 11^4$

3. $(2^{-4})^{-3}$

4. 13^{-7}

5. $3^{-5} \times 3^5$

6. $(10^{-5})^3$

7. $8^{-5} \times 8^4$

8. 15^{-4}

9. $7^8 \div 7^4$

10. 8^{-2}

11. 3^{-4}

12. $4^9 \div 4^4$

13. $12^{10} \div 12^{10}$

14. 10^{-5}

15. $8^{-7} \times 8^5$

16. $(6^{-3})^{-2}$

17. $2^{-7} \times 2^3$

18. $(4^{-5})^{-3}$