

Evaluate The Expression For U = $-15.-2(-12 U) =$

Evaluate The Expression For U = $-15.-2(-12 U) =$

When faced with algebraic expressions involving variables and multiple operations, it is essential to approach the problem methodically. The given expression, $U = -15.-2(-12 U)$, presents an opportunity to explore the principles of algebraic simplification, the order of operations, and solving for the variable U. This article aims to guide you through understanding, simplifying, and solving this expression step-by-step, ensuring clarity and mastery in handling similar algebraic problems.

Understanding the Expression

Before diving into calculations, it's crucial to interpret the expression correctly. The expression appears to be:

$$U = -15.-2(-12 U)$$

Let's break down what this represents:

- The first part, -15, is a constant.
- The second part, $-2(-12 U)$, involves multiplication of -2 with -12 U.
- The dot (.) in the expression is generally used as a multiplication sign in some contexts, but in standard algebra, it might simply be a separator or a formatting artifact. In this context, it appears to be a multiplication operator.

Given that, the expression can be rewritten more clearly as:

$$U = -15 - 2(-12 U)$$

This interpretation aligns with standard algebraic notation, where the expression involves a constant term and a product involving the variable U.

Step 1: Clarify the Expression and Notation

To ensure precise calculations, rewrite the original expression explicitly:

- Recognize that "-15" is a negative constant.
- Recognize that " $-2(-12 U)$ " is the product of -2 and -12 U.

Thus, the expression simplifies to:

$$U = -15 - 2(-12 U)$$

Step 2: Simplify the Expression

The main task is to simplify the right-hand side (RHS) of the equation:

$$U = -15 - 2(-12U)$$

Apply the multiplication:

- Multiply -2 by -12 U:

-2 -12 U = (since negative times negative yields positive):

$$24U = 24U$$

Therefore, the RHS becomes:

$$-15 + 24U$$

Now, the equation is:

$$U = -15 + 24U$$

Step 3: Solve for U

Once the expression is simplified, the next step is to isolate U on one side of the equation:

$$U = -15 + 24U$$

Subtract 24 U from both sides:

$$U - 24U = -15$$

Simplify:

$$-23U = -15$$

Now, divide both sides by -23 to solve for U:

$$U = \frac{-15}{-23}$$

Simplify the fraction:

$$U = \frac{15}{23}$$

Result:

The value of U is $\frac{15}{23}$

Additional Context: Importance of Correct Notation and Operations

Understanding how to interpret and manipulate algebraic expressions is fundamental in mathematics. The key points highlighted through this problem include:

- Recognizing the role of the multiplication sign and clear notation.
- Applying the distributive property correctly.
- Keeping track of negative signs throughout calculations.
- Isolating the variable to solve for its value.

Common Mistakes to Avoid

When dealing with similar expressions, students often make the following errors:

- **Misinterpreting notation:** Confusing dots or symbols as multiplication or other operations.
- **Incorrect sign handling:** Failing to apply negative signs properly, especially when multiplying negatives.
- **Neglecting to simplify step-by-step:** Jumping to the solution without proper intermediate steps.
- **Forgetting to isolate the variable:** Not moving all variable terms to one side before solving.

Adhering to systematic steps helps prevent these common pitfalls.

Practical Applications of Solving Such Expressions

Mastering the process of evaluating and solving algebraic expressions like this has numerous real-world applications, including:

- Calculating unknown quantities in physics and engineering problems.
- Financial modeling where variables represent different factors.
- Programming algorithms that involve algebraic calculations.
- Data analysis and scientific research requiring equation solving.

Ensuring accuracy in these steps is critical in professional and academic contexts.

Summary of the Solution Process

To recap, the key steps involved in evaluating and solving the expression are:

1. Rewrite the expression for clarity: $U = -15 - 2(-12 U)$
2. Apply multiplication: $-2(-12 U) = 24 U$

3. Simplify RHS: $U = -15 + 24 U$
4. Bring all U terms to one side: $U - 24 U = -15$
5. Simplify: $-23 U = -15$
6. Divide both sides by -23: $U = 15/23$

The final answer, $U = 15/23$, simplifies the original expression and provides the value of U in fractional form.

Conclusion

Evaluating the expression $U = -15 - 2(-12 U)$ effectively demonstrates the importance of careful notation interpretation, systematic simplification, and algebraic solving techniques. Whether in academic coursework or real-world problem-solving scenarios, mastering these steps enhances mathematical proficiency and confidence. Remember that clear notation, step-by-step calculations, and understanding the properties of numbers are essential skills for any aspiring mathematician or professional working with algebraic expressions.

Frequently Asked Questions

What is the value of U in the expression $U = -15 - 2(-12 U)$?

To find U, substitute U into the equation: $U = -15 - 2(-12 U)$. This simplifies to $U = -15 + 24 U$. Bringing all U terms to one side: $U - 24 U = -15$, which simplifies to $-23 U = -15$. Dividing both sides by -23 gives $U = (-15)/(-23) = 15/23$.

How do you solve for U in the expression $U = -15 - 2(-12 U)$?

First, expand the expression: $U = -15 + 24 U$. Then, move all U terms to one side: $U - 24 U = -15$, resulting in $-23 U = -15$. Finally, divide both sides by -23: $U = (-15)/(-23) = 15/23$.

What steps are involved in evaluating the expression $U = -15 - 2(-12 U)$?

The steps include: 1) Expand the multiplication: $-2(-12 U) = 24 U$, 2) Rewrite the equation as $U = -15 + 24 U$, 3) Rearrange to isolate U: $U - 24 U = -15$, 4) Simplify to $-23 U = -15$, 5) Divide both sides by -23 to find $U = 15/23$.

Is the solution $U = 15/23$ valid for the expression $U = -15 - 2(-12 U)$?

Yes, solving the equation leads to $U = 15/23$, which is the valid solution for the given expression.

Can you verify the solution $U = 15/23$ by substituting back into the original expression?

Yes, substitute $U = 15/23$ into the original expression: $U = -15 - 2(-12 U)$. Calculate the right side: $-15 - 2(-12 \cdot 15/23) = -15 - 2(-180/23) = -15 + 360/23$. Convert -15 to a fraction: $-15 = -345/23$. So, $-345/23 + 360/23 = 15/23$, which matches the U value, confirming the solution is correct.

Additional Resources

Evaluate The Expression For $U = -15 - 2(-12 U) =$ is a mathematical statement that invites us to carefully analyze and simplify an algebraic expression involving a variable (U) . This type of problem is foundational in algebra, as it helps develop skills in manipulating expressions, understanding order of operations, and solving for variables. Whether you're a student brushing up on algebraic techniques or a professional revisiting the fundamentals, breaking down such expressions step-by-step ensures clarity and accuracy. In this comprehensive guide, we will explore how to evaluate the given expression thoroughly, interpret its components, and understand the underlying principles involved.

Understanding the Expression

Before diving into calculations, it is crucial to interpret the expression correctly. The expression provided is:

$$U = -15 - 2(-12 U) =$$

At first glance, the notation may seem confusing, but with a careful approach, we can clarify its structure.

Potential Interpretations

- The expression appears to set (U) equal to a certain value, which involves a product of constants and the variable (U) .
- The notation $-15 - 2$ suggests multiplication between -15 and -2 , or possibly a typo or formatting issue.
- The presence of $-2(-12 U)$ indicates a multiplication involving (U) .

Given this, the most logical interpretation is:

(U)

$$U = -15 \times -2 \times (-12 U)$$

or, more explicitly,

$$U = (-15) \times (-2) \times (-12 U)$$

Alternatively, it could be that " $U = -15 \cdot -2(-12 U)$ " is shorthand notation for an expression involving multiple steps.

Clarifying the Expression

Assuming the expression is:

$$U = -15 \times -2 \times (-12 U)$$

This interpretation aligns with standard algebraic notation, where dots often denote multiplication.

Step-by-Step Evaluation

Let's proceed with the assumption that the expression is:

$$U = -15 \times -2 \times (-12 U)$$

This form involves constants and the variable (U) , and our goal is to evaluate or solve for (U) .

Step 1: Simplify Constants

Calculate the product of the constants:

$$-15 \times -2 = 30$$

Multiplying two negatives yields a positive:

$$-15 \times -2 = 30$$

Now, the expression becomes:

$$U = 30 \times (-12 U)$$

Step 2: Simplify the Expression

Multiply 30 by $(-12 U)$:

$$U = 30 \times (-12 U) = (30 \times -12) \times U$$

Calculate (30×-12) :

$$30 \times -12 = -360$$

Therefore,

$$U = -360 U$$

Solving for (U)

Now, the expression simplifies to:

$$U = -360 U$$

This is an algebraic equation that can be solved for (U) .

Step 3: Bring All Terms to One Side

Subtract (U) from both sides:

$$U - (-360 U) = 0$$

which simplifies to:

$$U + 360 U = 0$$

Combine like terms:

$$\backslash[(1 + 360) U = 0 \backslash]$$

$$\backslash[361 U = 0 \backslash]$$

Step 4: Isolate (U)

Divide both sides by 361:

$$\backslash[U = \frac{0}{361} = 0 \backslash]$$

Final Result

The value of (U) that satisfies the expression is:

$$U = 0$$

Additional Insights and Considerations

While our assumption about the expression's structure led us to a straightforward solution, it's important to recognize alternative interpretations and their implications.

Alternative Interpretations

- If the original expression was intended differently, such as involving addition or subtraction, the steps would vary.
- If the notation "-15.-2" was a typo or formatting issue, clarification would be necessary.
- In some contexts, "." can denote multiplication, but it can also be a decimal point. Clarifying the notation is essential.

Common Mistakes to Avoid

- Misreading the notation: Always verify whether dots denote multiplication or decimal points.
- Neglecting signs: Pay close attention to negative signs during multiplication.
- Assuming incorrect order of operations: Follow PEMDAS (Parentheses, Exponents, Multiplication and Division, Addition and Subtraction).

Practice Problems

To reinforce understanding, try evaluating similar expressions:

1. $(V = -10 \times -3 \times (5V))$
2. $(W = -8 \times -2 \times (-4W))$
3. $(X = 7 \times -2 \times (-3X))$

Solve each step-by-step following the principles outlined above.

Summary

Evaluating the expression $U = -15 - 2(-12U)$ involved:

- Interpreting the notation correctly.
- Simplifying constants through multiplication.
- Recognizing the structure as an algebraic equation involving (U) .
- Solving the resulting linear equation for (U) .

The key takeaway is the importance of carefully parsing the expression, methodically simplifying, and systematically solving to find the value of the variable. In this case, the solution $(U = 0)$ demonstrates how algebraic manipulation can transform complex-looking expressions into straightforward solutions.

Final Thoughts

Mathematical expressions often seem daunting at first glance. However, with patience and structured reasoning, you can decode and evaluate them effectively. Whether you're working with simple algebraic equations or more complex expressions, the skills demonstrated here—breaking down expressions, simplifying step-by-step, and solving equations—are universal tools in mathematics. Keep practicing with varied problems to build confidence and mastery in evaluating and solving algebraic expressions like the one we've explored today.

[Evaluate The Expression For U 15 2 12 U](#)

Evaluate The Expression For U 15 2 12 U

Related Articles

- [What Does The Autumnal Equinox Indicate In September](#)
- [Choose 1 Answer:A. 6B. \$\sqrt\[6\]{3}\$ C. 12D. 18E. 24](#)
- [Find The Area Of The Trapezoid. \$A = \frac{1}{2}h\(b+b\)\$](#)

[Back to Home](#)