Mastering Algebraic Expressions: Part II - Collecting Like Terms With Ease

The Ultimate Guide to Simplifying and Solving Algebraic Expressions like a Pro

Welcome back, math enthusiasts! In the second part of our comprehensive guide to algebraic expressions, we will dive deeper into the realm of collecting like terms. Brace yourselves, as we demystify this seemingly complex concept and equip you with the skills to breeze through any algebraic equation. Get ready to unlock a whole new level of algebraic wizardry!

Understanding Like Terms

Before we delve into the process of collecting like terms, let's ensure we are on the same page with the definition of "like terms." In algebraic expressions, like terms are those that have the same variables raised to the same power. For instance, terms like 5x and -2x can be combined because they both have the variable 'x' raised to the power of 1. Sounds simple enough, right? Let's move on!

The Collecting Like Terms Process

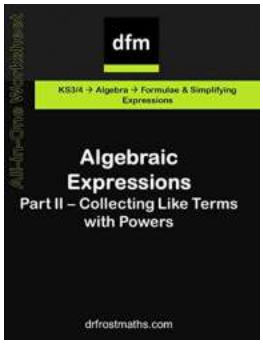
Now that we know what like terms are, let's explore the step-by-step process of collecting them in an algebraic expression:

All in One Worksheet - Algebraic Expressions - Part II - Collecting Like Terms with Powers

by Nelzon Rodriguez Lezana (Kindle Edition)

4 out of 5

Language : English



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Step 1: Identify the Like Terms

Scan through the expression and identify all the terms that have the same variable(s) raised to the same power. Circle or underline these terms to make them easily recognizable. Remember, terms without variables or different variable powers cannot be combined as like terms.

Step 2: Simplify the Coefficients

Next, calculate the coefficients (the numbers multiplying the variables) of the like terms. If there is no coefficient explicitly written, it is assumed to be 1. Combine the coefficients of the like terms by applying suitable operations (addition/subtraction).

Step 3: Combine the Variables

After simplifying the coefficients, combine the variables to create a single term. If a variable appears multiple times in the expression, add or subtract the coefficients accordingly, but keep the variable part the same.

Step 4: Rewrite the Simplified Expression

Once you've simplified the coefficients and combined the variables, rewrite the expression using the simplified form. Remember to maintain the correct order of

terms and follow the mathematical conventions.

Example Problems

Let's apply the collecting like terms process to a few example problems, so you can grasp it better:

Problem 1:

Simplify the expression: 3x - 5x + 2y + 4x - 7y + 2y - 3z

Solution:

We start by identifying the like terms in the given expression:

- 3x, -5x, and 4x (all have 'x' raised to the power of 1)
- 2y, -7y, and 2y (all have 'y' raised to the power of 1)
- -3z (no other term with 'z' exists)

Now, let's simplify the coefficients:

- 3x - 5x + 4x = 2x
- 2y - 7y + 2y = -3y

Finally, we rewrite the expression using the simplified form:

2x - 3y - 3z

Problem 2:

Simplify the expression: -2a + 5b - 3a - 2b + 7a + 4b

Solution:

We start by identifying the like terms in the given expression:

- -2a, -3a, and 7a (all have 'a' raised to the power of 1)
- 5b, -2b, and 4b (all have 'b' raised to the power of 1)

Now, let's simplify the coefficients:

- -2a - 3a + 7a = 2a
- 5b - 2b + 4b = 7b

Finally, we rewrite the expression using the simplified form:

2a + 7b

Congratulations! You have now gained the foundation to easily collect like terms in algebraic expressions. With regular practice, this process will become second nature to you. Stay tuned for the next part of our all-in-one worksheet series!

Article written by YourName

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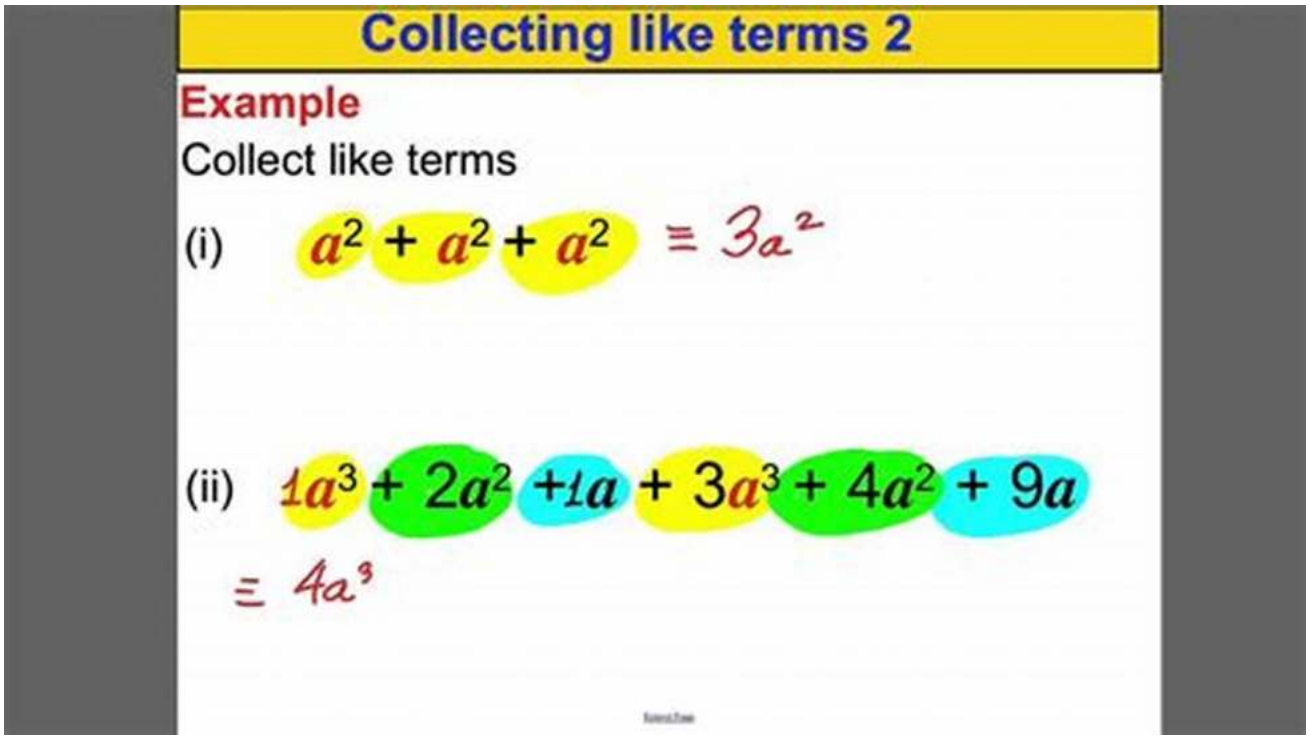

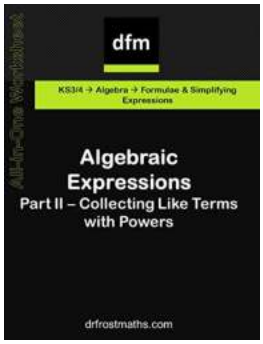

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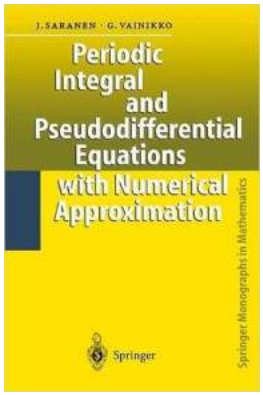

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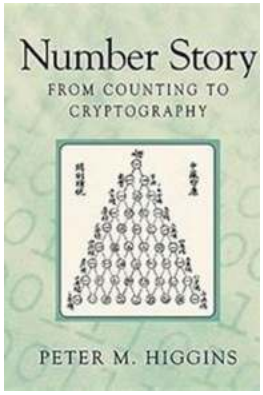

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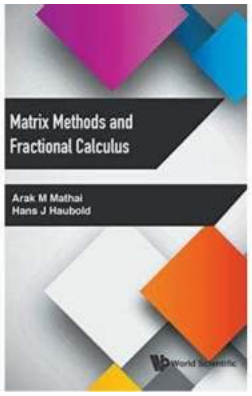

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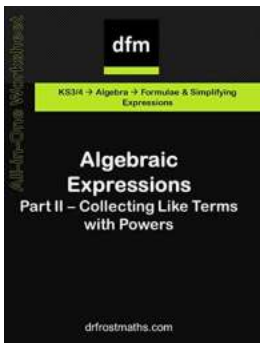

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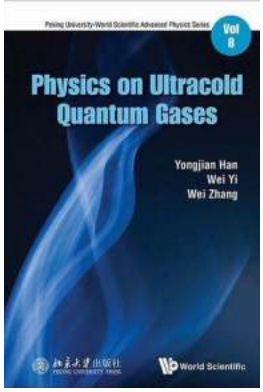

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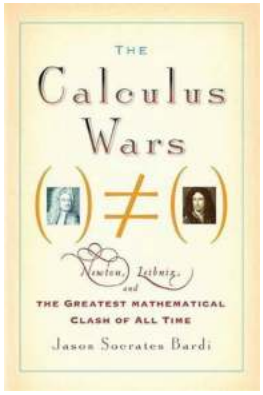

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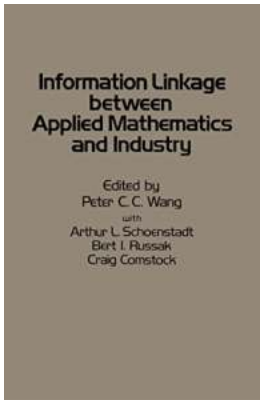

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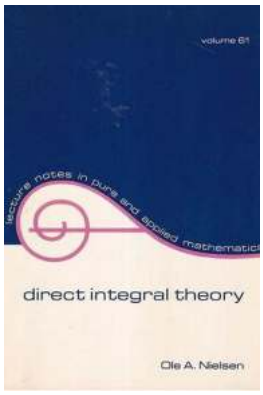

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