STEP-BY-STEP PROBLEM SOLVING, INTERMEDIATE pdf

1: Algebra Help - Calculators, Lessons, and Worksheets | Wyzant Resources

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Solving Equations The solution of equations is the central theme of algebra. In this chapter we will study some techniques for solving equations having one variable. To accomplish this we will use the skills learned while manipulating the numbers and symbols of algebra as well as the operations on whole numbers, decimals, and fractions that you learned in arithmetics. Classify an equation as conditional or an identity. Solve simple equations mentally. Determine if certain equations are equivalent. An equation is a statement in symbols that two number expressions are equal. Equations can be classified in two main types: An identity is true for all values of the literal and arithmetical numbers in it. A conditional equation is true for only certain values of the literal numbers in it. The literal numbers in an equation are sometimes referred to as variables. Finding the values that make a conditional equation true is one of the main objectives of this text. A solution or root of an equation is the value of the variable or variables that make the equation a true statement. The solution or root is said to satisfy the equation. Solving an equation means finding the solution or root. Many equations can be solved mentally. Ability to solve an equation mentally will depend on the ability to manipulate the numbers of arithmetic. The better you know the facts of multiplication and addition, the more adept you will be at mentally solving equations. Example 6 Solve for x: Our knowledge of arithmetic indicates that 4 is the needed value. What number added to 3 equals 7? Example 7 Solve for x: Example 8 Solve for x: Solution What number do we divide 2 by to obtain 7? Our answer is Example 10 Solve for x: Regardless of how an equation is solved, the solution should always be checked for correctness. Was this right or wrong? To check we substitute 6 for x in the equation to see if we obtain a true statement. Many students think that when they have found the solution to an equation, the problem is finished. The final step should always be to check the solution. Not all equations can be solved mentally. We now wish to introduce an idea that is a step toward an orderly process for solving equations. Techniques for solving equations will involve processes for changing an equation to an equivalent equation. Two questions now become very important. Are two equations equivalent? How can we change an equation to another equation that is equivalent to it? The answer to the first question is found by using the substitution principle. Solution The answer to the second question involves the techniques for solving equations that will be discussed in the next few sections. To use the substitution principle correctly we must substitute the numeral 3 for x wherever x appears in the equation. Use the division rule to solve equations. Solve some basic applied problems whose solutions involve using the division rule. As mentioned earlier, we wish to present an orderly procedure for solving equations. This procedure will involve the four basic operations, the first of which is presented in this section. If each term of an equation is divided by the same nonzero number, the resulting equation is equivalent to the original equation. To prepare to use the division rule for solving equations we must make note of the following process: We usually write 1x as x with the coefficient 1 understood. Example 1 Solve for x: This would give us a coefficient of 1 for x. Example 2 Solve for x: Since dividing by zero is not allowed in mathematics, expressions such as are meaningless. Example 3 Solve for x: Note that the division rule allows us to divide each term of an equation by any nonzero number and the resulting equation is equivalent to the original equation. Therefore we could divide each side of the equation by 5 and obtain , which is equivalent to the original equation. Dividing by 5 does not help find the solution however. What number should we divide by to find the solution? Example 4 Solve for x: Find the radius of a circle if the circumference is measured to be Give the answer correct to two decimal places. Solution To solve a problem involving a formula we first use the substitution principle. Circumference means "distance around. The radius is the distance from the center to the circle. The second step toward an orderly procedure for solving equations will be discussed in this section. Notice how new ideas in algebra build on previous knowledge. If the same quantity is subtracted from both sides of an equation, the resulting equation will be equivalent to the original equation. Solution Even though this equation can easily be solved mentally, we wish to illustrate the subtraction rule. We should think in this manner: But if we subtract 7 from one side of

the equation, the rule requires us to subtract 7 from the other side as well. So we proceed as follows: I thus need to subtract Ax from both sides. Remember that checking your solution is an important step in solving equations. First subtract 6 from both sides. Now we must eliminate 2x on the right side by subtracting 2x from both sides. We now look at a solution that requires the use of both the subtraction rule and the division rule. Example 5 Solve for x: If the perimeter of a rectangle is 54 cm and the length is 15 cm, what is the width? Solution Perimeter is the distance around. We now proceed to the next operation in our goal of developing an orderly procedure for solving equations. Once again, we will rely on previous knowledge. If the same quantity is added to both sides of an equation, the resulting equation will be equivalent to the original equation. Remember to always check your solution. Now we must use the division rule. Why do we add 3 to both sides? Note that in the example just using the addition rule does not solve the problem. Then using the division rule, we obtain Here again, we needed to use both the addition rule and the division rule to solve the equation. We next apply the division rule. Here again, we needed to use both the addition rule and the division rule to solve the equation. Note that we check by always substituting the solution in the original equation. We must think of eliminating the number 2 from the left side of the equation and also the lx from the right side to obtain x alone on one side. We may do either of these first. If we choose to first add 2x to both sides, we obtain We now add 2 to both sides. Finally the division rule gives Could we first add 2 to both sides? Use the multiplication rule to solve equations. Solve some basic applied problems using the multiplication rule. We now come to the last of the four basic operations in developing our procedure for solving equations. We will also introduce ratio and proportion and use the multiplication rule to solve proportions. If each term of an equation is multiplied by the same nonzero number, the resulting equation is equivalent to the original equation. In elementary arithmetic some of the most difficult operations are those involving fractions. The multiplication rule allows us to avoid these operations when solving an equation involving fractions by finding an equivalent equation that contains only whole numbers.

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2: Free Online Math Solver!

The Step-By-Step Problem Solving Homework Booklet will help students build strong problem solving skills as they work through this great book! The book is designed to help develop a basic understanding of important problem solving skills and concepts.

Start now Become a member MathHelp. Unlike a traditional math classroom, we offer the one-on-one learning experience that every student needs to conquer Intermediate Algebra. Comprehensive instruction throughout every lesson Every lesson includes videos, guided practice, self-tests, and more! Background lessons If you are struggling on a particular topic, we offer relevant background lessons to rebuild your math foundation! Grade reporting and progress tracking We offer detailed grade reporting and progress tracking to keep on task while completing your Intermediate Algebra curriculum! It is a great help. I only had basic math in the 9th and 10th grade in high school 40 years ago , and never had any experience with algebra at all. Thank you thank you for your help!! I know that this will be the last time I will be taking this course!! I love the site and there is not a doubt in my mind, without it, I would be lost. Thanks for providing this service. His English is so bad the class decided to come in 2 hours before class to get intermediate algebra tutoring from this site. I am taking intermediate algebra at our community college. Math has always been a struggle for me, and college math is no exception. Then I can test to see how I am doing. I have a teacher that expects us to read the directions and figure it out. I was desperate for some help. Your program is amazing and the teaching skills are incredible. I plan on extending my subscription until the end of the semester. I spend hours on your site each day. I am recommending this program to everyone I know. I am in intermediate algebra in college and I must say that without the use of your program, I would have been struggling a lot! Thank you and keep up the great tutorials. I love the program and wish that I had discovered it earlier. I recommend it very highly to my friends. I am enjoying the website and look forward to using it until I have completed my math requirements. So I chose MathHelp. I was willing to pay the money and it was well spent. I will continue to market MathHelp. I am an Intermediate Algebra student and used your service to prepare myself for exams. I have only used this site for a month but the Intermediate Algebra lessons are great and I like having the ability to access this site from anywhere. I highly recommend this site for learning Intermediate Algebra. Well worth every cent!! This program is well worth the money. I wish I had this years ago. I thought I was screwed. Signed up for this site and love it!!!! Concepts are clear and I understand Intermediate Algebra now, lol. Your modules follow right along with our book. I wish the college had told us earlier about this website. Feels like you are actually taking an Intermediate Algebra course. Start now by clicking on a lesson below!

3: Mathway | Algebra Problem Solver

Step-by-Step Calculator Solve problems from Pre Algebra to Calculus step-by-step.

A New Level of Step-by-Step Solutions in Wolfram Alpha September 7, â€" Greg Hurst , Consultant, Wolfram Alpha Math Content In our continued efforts to make it easier for students to learn and understand math and science concepts, the Wolfram Alpha team has been hard at work this summer expanding our step-by-step solutions. We also continue to add moreâ€"over 60 topics have step-by-step coverage in domains such as algebra, calculus, geometry, linear algebra, discrete math, statistics and chemistry. Be sure to check out our examples page to see more areas that have step-by-step solutions. And with the new intermediate steps feature, expect the coverage to grow over the next few months. A New Look and Intermediate Steps In addition to new areas of coverage, all step-by-step topics have been improved by adding more detail through expandable intermediate steps. In the example above, steps 3, 4 and 5 have such a button. This functionality is important for keeping the step-by-step solutions readable, while still providing all relevant information. If these steps were laid out in a linear fashion, it would be easy to get lost in the steps pertinent to finding the extrema. The main steps are now the outline of how to find the extrema, and the intermediate steps provided by the new button give the specific details used in each step. In cases like this, only one set of intermediate steps is shown at a time, and clicking another will replace the one currently expanded. Intermediate steps open a new door on the types of step-by-step solutions we can provide. The World of Step-by-Step So what are step-by-step solutions exactly? Wolfram Alpha has pioneered step-by-step solutions for nearly 10 years, and we continue to be the industry standard. These solutions show how to get to an answerâ€"not just what the answer is. The main results shown are calculations, i. But we can go further and see how one could find the answer. Instead we start from scratch, building a stack of functionality meant to handle any query thrown at it. The Wolfram Language is the perfect language for a project like this. For example, the Wolfram Language computes most first-order derivatives similar to the way humans doâ€"by continually using a large table of identities. When computing an integral, for example, most likely the Risch algorithm or a Mellin convolution of Meijer G-functions is being used. Instead, our step-by-step solutions take the approach a human would most likely takeâ€"that is, using heuristics to look for substitutions, integrate by parts, etc. The use of the Wolfram Language makes it possible to aim for the highest quality step-by-step solutions. Over 80 major universities including nearly the entire Ivy League trust our solutions enough to have site licenses for Wolfram Alpha Pro. As always, your feedback is appreciated as we strive to make Wolfram Alpha even more useful for students everywhere.

4: Step-by-Step Mathâ€"Wolfram|Alpha Blog

After taking our course, simply retake your math placement exam and place out of Intermediate Algebra. Alternatively, learn the concepts at home, then go to class when you have a test. However you use our Intermediate Algebra course, it's the smart way to conquer remedial math.

5: Step-by-Step Calculator - Symbolab

Step by Step Maths Worksheets Solvers. Step by step Maths worksheets solvers to help you create as many questions as you wish and solve them. The interactivity in these worksheets helps you learn how to solve challenging maths problems and learn basic and advanced maths skills.

6: Virtual Math Lab - Intermediate Algebra

Earning a Professional Practice Credential: a step-by-step guide Problem Solving Intermediate DeakinDigital April

7: Solve linear and quadratic equations with Step-by-Step Math Problem Solver

Solving simple equations by multiplying both sides by the same number occurs frequently in the study of ratio and proportion. A ratio is the quotient of two numbers. The ratio of a number x to a number y can be written as x:y or.

8: WT Virtual Math Lab - THEA/ACCUPLACER Math Help

intermediate steps toward a solution. algorithm. step-by-step procedure for solving a problem. mental set. Understanding Psychology (Chapter 11) 20 terms.

9: Cymath | Math Problem Solver with Steps | Math Solving App

confuse a problem like â˜ 3 â˜ 8 with â˜ 3(â˜ 8). The second problem is a multipli- cation problem because there is nothing between the 3 and the parenthesis.

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