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# Solving quadratic equations worksheet answers algebra 2

The code is then pasted, and its original file is attached above. In addition, the accompanying figures show the results of various scenarios.// Copyright © Talal 2016. All rights reserved. #include #include // this library must be included in order to use the built-in mathematical functions int main() , while (1) //remind the user of the quadratic equation format printf(Quadratic equation format: aX-2 + bX + c ); declare inputs and outputs and their float types a, b, c, determinant, x1, x2, realSolution, imaginarySolution; take user input printf(Enter coefficients a, b, c respectively separated by a comma); scanf(%f, %f, %f, &a, &b, &c); if (a to 0) - printf(This is not a quadratic equation); break; • // calculate the determinant to determine the number and type of determinants of the solution ((b*b) - (4 * a* c)); printf( Determinant á %f , determinant); if (determining a 0) - // if the determinant is zero, then there will be a solution x1 to x2 a (-b)/(2*a); printf(A real solution and is %0.1f , x1); else if (determinant > 0) to x1 á ((-b) + sqrtf(determinant))/(2*a); x2 á ((-b) - sqrtf(determinant))/(2*a); printf(Two distinct real solutions and they are %0.1f, and %0.1f , x1, x2); otherwise // finally, if the determinant is negative, then the solutions will contain an imaginary part realSolution -b /(2*a); imaginarySolution - sqrtf(-determinant)/(2*a); printf( Complex Solutions, and are %0.1f + %0.1fi and %0.1f - %0.1fi , realSolution, imaginarySolution, realSolution, Equivalent equations are systems of equations that have the same solutions. Identifying and solving equivalent equations is a valuable skill, not only in the algebra class, but also in everyday life. Take a look at examples of equivalent equations, how to solve them for one or more variables, and how you could use this skill outside a classroom. Equivalent equations are algebraic equations that have identical solutions or roots. Adding or subtracting the same number or expression on both sides of an equation produces an equivalent equation. Multiplying or dividing both sides of an equation by the same nonzero number produces an equivalent equation. The simplest examples of equivalent equations have no variables. For example, these three equations are equivalent to each other: 3 + 2 x 54 + 1 x 55 + 0 to 5 Recognize that these equations are equivalent is great, but not particularly useful. Typically, an equivalent equation problem asks you to solve one variable to see if it is the same (the same root) as that of another equation. For example, the following equations are equivalent: in both cases, x to 5. How do we know this? How do you solve this for equation -2x -10? The first step is to know the rules of equivalent equations: Add or subtract the same number or expression on either side of a produces an equivalent equation. Multiply or divide both sides of an equation by the same number produces an equivalent equation. Raising both sides of the equation to the same odd power or taking the same odd root will produce an equivalent equation. If both sides of an equation are not negative, raising both sides of an equation to the same uniform power or taking the same uniform root will give an equivalent equation. Put these rules into practice, determine if these two equations are equivalent: To solve this, you need to find x for each equation. If x is the same for both equations, then they are equivalent. If x is different (that is, equations have different roots), then the equations are not equivalent. For the first equation: x + 2 x 7x + 2 - 2 to 7 - 2 (subtracting both sides by the same number) x a 5 For the second equation: 2x + 1 x 112x + 1 -1 - 11 - 1 (subtracting both sides by the same number)2x to 102x/2 to 10/2 (dividing both sides of the equation by the same number)x to 5 So, yes, the two equations are equivalent because x to 5 in each case. You can use equivalent equations in daily life. It's particularly useful when shopping. For example, you like a particular shirt. One company offers the shirt for $6 and has $12 shipping, while another company offers the shirt for $7.50 and has $9 shipping. Which shirt has the best price? How many shirts (you might want to get them for friends) would you have to buy to make the price the same for both companies? To resolve this issue, let x be the number of shirts. For starters, set x 1 for the purchase of a shirt. For company #1: Price 6x + 12 á (6)(1) + 12 to 6 + 12 to $18 For the company #2: Price 7.5x + 9o (1)(7.5) + 9 x 7.5 + 9 x 16.50 Euros if you are buying a shirt, the second company offers a better offer. To find the point where prices are the same, let x remain the number of shirts, but set the two equations equal to each other. Solve for x to find how many shirts you would have to buy: 6x + 12 x 7.5x + 96x - 7.5x to 9 - 12 (subtracting the same numbers or expressions from each side)-1.5x to -31.5x to 3 (dividing both sides by the same number, -1)x to 3/1.5 (dividing both sides by 1.5)x to 2 If you buy two shirts, the price is the same, no matter where you get it. You can use the same math to determine which company gives you the best deal with larger orders and also to calculate how much you'll save using one company over the other. See, algebra is useful! If you have two equations and two unknowns (x and y), you can determine whether two sets of linear equations are equivalent. For example, if you are given the equations: -3x + 12y - 157x - 10y - -2 You can determine if the following system is equivalent: To solve this problem, search for x and y for each system of equations. If the values are the same, then the systems of equations are equivalent. Start with the first set. To solve equations with two variables, isolate one variable and connect your solution to the other equation. To isolate the variable y: -3x + 12y to 15-3x to 15 - 12yx -(15 - 12y)/3 to -5 + 4y 4y in the case of x in the second equation)7x - 10y to -27(-5 + 4y) - 10y to -2-35 + 28y - 10y to -218y to 33y to 33/18 to 11/6 Now, Plug and back into any of the equations to solve for x: 7x - 10y - -27x - -2 + 10(11/6) Working through this, you will finally get x - 7/3. To answer the question, you could apply the same principles to the second set of equations to solve for x and y to find that yes, in fact they are equivalent. It's easy to get bogged down in algebra, so it's a good idea to check your work using an online equation solver. However, the smart student will notice that the two sets of equations are equivalent without making any difficult calculations at all. The only difference between the first equation in each set is that the first is three times the second (equivalent). The second equation is exactly the same. In mathematics, a linear equation is one that contains two variables and can be plotted on a chart as a straight line. A system of linear equations is a group of two or more linear equations that contain the same set of variables. Linear equation systems can be used to model real-world problems. They can be solved using a number of different methods: GraphingSubstitutionElimination by additionRemoving Eric Raptosh Photography/Blend Images/Getty Images Graphing is one of the easiest ways to solve a system of linear equations. All you have to do is graph each equation as a line and find the points where the lines intersect. For example, consider the following system of linear equations that contain the variables x andy: y a x + 3y - -1x - 3 These equations are already written in the form of slope interception, so they are easy to plot. If the equations were not written as a slope intersection, you would first need to simplify them. Once this is done, the resolution of x and y requires only a few simple steps: 1. Plot both equations. 2. Find the point where the equations intersect. In this case, the answer is (-3, 0). 3. Verify that your answer is correct by connecting the x -3 e and a 0 values in the original equations. and x + 3(0) á (-3) + 30 to 0 and - -1x - 30 to -1(-3) - 30 - 30 - 30 to 0 Another way to solve a system of equations is by substitution. With this method, you are basically simplifying one equation and incorporating it into the other, allowing you to remove one of the unknown variables. Consider the following system of linear equations: 3x + and a 6x to 18 -3, and In the second equation, x is already isolated. If that were not the case, we would first have to simplify the equation to isolate x. After we have isolated x in the second equation, we can replace the x in the first equation with the equivalent value of the second equation: (18 - 3y). 1. Replace x on the first with the given value of x in the second equation. 3 (18 – 3y) + and 6 2. Simplify each side of the equation. 54 – 9y + and a 654 – 8y to 6 3. Solve the equation for y. 54 – 8y – 54 to 6 – 54-8y to -48-8y/-8 to -48/-8 and 6 4. Connect Connect • 6 and resolve for x. x to 18 -3yx to 18 -3(6)x to 18 - 18x to 0 5. Verify that (0.6) is the solution. x - 18 -3y0 to 18 – 3(6)0 to 18 -180 to 0 If the linear equations given to it are written with the variables on one side and a constant on the other, the easiest way to solve the system is by removing it. Consider the following system of linear equations: x + y a 1803x + 2y to 414 1. First, type the equations side by side so you can easily compare the coefficients with each variable. 2. Then multiply the first equation by -3. -3(x + y a 180) 3. Why do we multiply by -3? Add the first equation to the second equation to find out. -3x + -3y -540+ 3x + 2y to 4140 + -1 and -126 Now we have removed the variable x. 4. Resolve for variable y: and at 126 5. Plug and 126 to find x. x + y at 180x + 126 to 180x to 54 6. Verify that (54, 126) is the correct answer. 3x + 2y to 4143(54) + 2(126) to 414414 to 414 Another way to solve by elimination is to subtract, instead of adding, the given linear equations. Consider the following system of linear equations: y - 12x to 3y - 5x -4 1. Instead of adding the equations, we can subtract them to remove y. and - 12x to 3- (y - 5x - 4)0 - 7x to 7 2. Solve for x. -7x to 7x -1 3. Plug x to -1 to solve for y. and - 12x to 3y - 12(-1) to 3y + 12 to 3y to -9 4. Verify that (-1, -9) is the correct solution. (-9) - 5(-1) -4-9 + 5 a -4-4 - -4 -4

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