To find the solution of quadratic equation by completing square method

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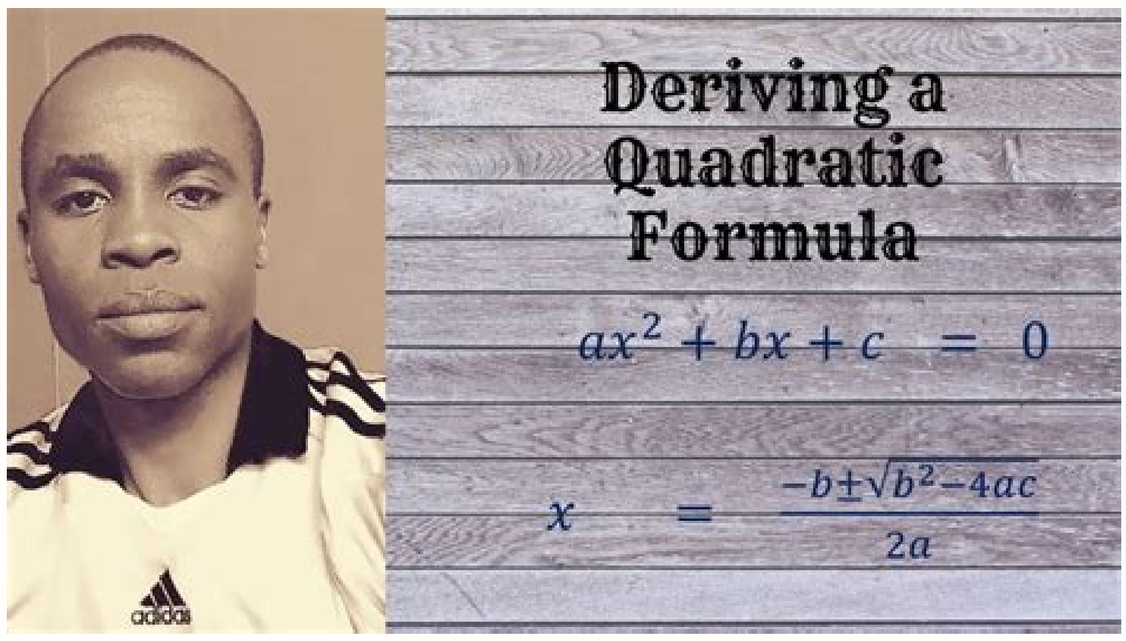
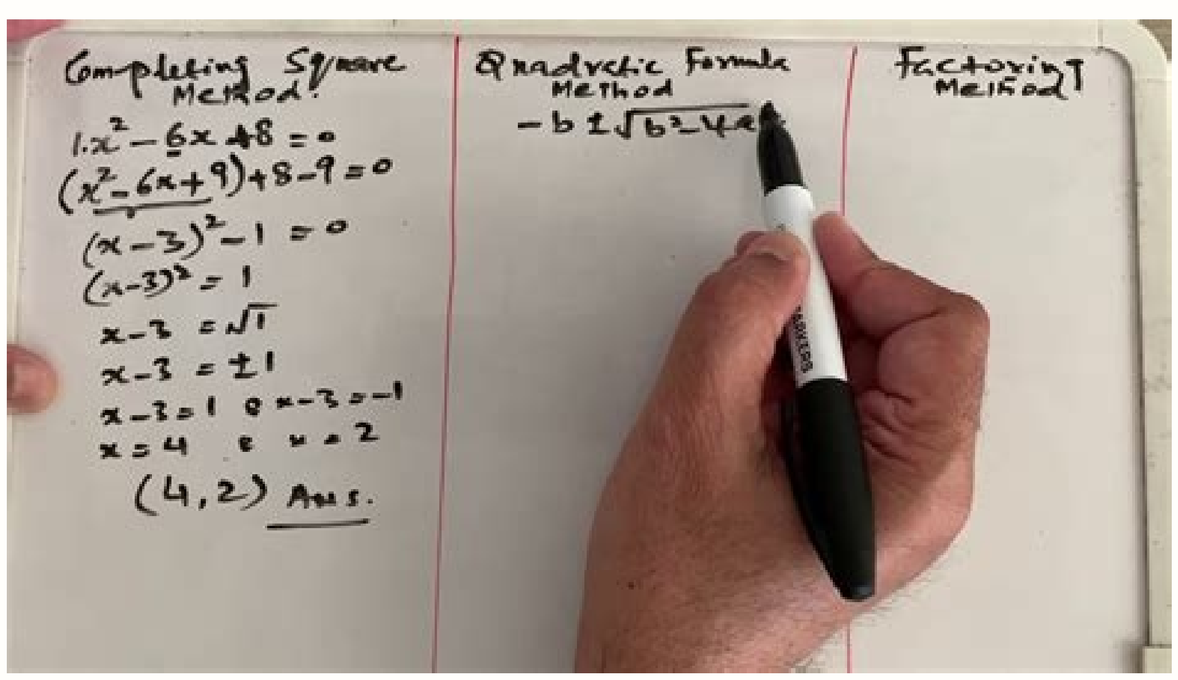
$$x^2 + 10x + 4 = 15$$
$$(1)^2 + 10(1) + 4 \stackrel{?}{=} 15$$
$$1 + 10 + 4 \stackrel{?}{=} 15$$
$$15 = 15 \checkmark$$

$$x^2 + 10x + 4 = 15$$
$$(-11)^2 + 10(-11) + 4 \stackrel{?}{=} 15$$
$$121 + 110 + 4 \stackrel{?}{=} 15$$
$$15 = 15 \checkmark$$



so, $x^2-3x-2+2=0$

$x^2-3x=2$



Algebra is a mathematical science that examines various symbols that have not been assigned a fixed value or magnitude, but according to another feature that changes or represented quantities that change or change over time. In algebra, these symbols are called variables and the numbers associated with them are called coefficients. They can be expressed in many ways, including the British alphabet. In other words, algebra is to examine how it is represented by letters or symbols without emphasizing the real meanings of numbers. The second -degree equation is a second -degree equation, a second -degree algebraic expression for X. A second -degree equation is written as Ax2 + BX + C = 0, where A and B are coefficients, x is a variable and C is a fixed coefficient. The coefficient of X2 should not be zero for the classification of an equation as a second -degree equation (A ≤ 0). When writing a second -degree equation standardly, the term x2 comes first, then the term x and finally the constant term comes. A, B and C usually use integer values, not fractions or decimal numbers. The method or method of converting a second -degree polynomial or equation to a full square method or method is called full square method. Using a full second -degree formula or method, the second -degree equation in which A, A, AX2 + BX + C variable A, B and C are real values except A = 0, can be converted into a second -degree equation with perfect perfect perfectly. or complementary fixed. The completion of the second -degree formula is given with ax2 + bx + c a (x + m) 2 + n, where m = b/2a, n = câ (b2/4a) M may be any actual number and n and n is a constant . Derivation: Suppose the second -degree equation is Ax2 + BX + C. Ax2 + bx + c = a (x2 + (b/a) x) + c = a (x2 + 2 (bx/2a) + (b/2a) 2 Â (b/2a) 2). + c = a (x2 + 2 (bx/2a) + (b/2a) 2 Â B2/4a2) + c = a (x2 + 2 (bx/2a) + (b/2a) 2) + (Câ) B2/4A) (A + B) 2 = A2 + B2 + 2AB feature, = A (x + b/2a) 2 + (c â b2/4a) B/2A'yu replace with a number of ms and (c â b2 /4a) We obtain = a (x + m) 2 + n according to the fixed value. This derives the formula of completing the second -degree method. Second -degree dissolution method: x2 + 4x Â 21 = 0. Solution: A = 1, B = 4 and C = 21. m and n.m = 4/2 = 2n = Â21 Â (16/4)) = â21 Â21 Â 4 = Â25 The equation is solved as follows: (x + 2) 2 Â 25 = 0x + 2 = ± 5x = 3,2: Use the quadratic method to solve: x2 + 10x + 21 = 0. Solution: A = 1, B = 10, and C = 21. (100/4) = 21 â 25 = â4donc, the equation (x + 5) 2 â 4 = 0x + 5 = ± 2x = â3, â7 Question 3: Use the quadratic method to solve: x2 + 6x â 27 = 0 . Solution: Value of m and n.m = 6/2 = 3n = â27 â (36/4) = â27, a = 1, b = 6 and c = â27. The equation, (x + 3) 2 â 36 = 0x + 3 = ± 6x = 3, â9 Question 4: Use the quadratic method to solve: x2 + 12x 13 = 0. Solution: We, a = 1, b = 12 and c = â13. M and n.m = 12/2 = 6n = â13 â (144/4) = â13 â 36 = â49DONC Value, Equation, (x + 6) 2, (x + 6) 2 â 49 = 0x + 6 = â â 7x = 1, â13 Exercise 5: Use the quadratic method to solve: x2 + 20x + 19 = 0. Solution: a = 1, b = 20 and c = 19. m and n.m = 20/2 = 10n = 19 â (((400/4) = 19 - 100 = â81ain, equation, (x + 10) 2 â 81 = 0x + 10 = ± 9x = â1, â19 Exercise 6: Use the quadratic method to solve: x2 + 6x 16 = 0. Solution: a = 1, b = 6 and c = â16.M and n.m = 6/2 = 3n = â16 â (36/4) = â16 â 9 = â25ain Value, the equation is solved as, (x + 3) 2 â 25 = 0x + 3 = ± 5x = 2, Â8 Problem 7: Use to complete the quadratic method to solve: M and n.m = â4 / 2 = â2n = â12 â (16/4) = â12 â12 â 4 = â16DONC value, the equation is solved as follows: (x 2) 2 â 16 = 0x 2 = ± 4x = 6, â2 Finally: the square, \ (x ^{2}+bx+c = 0 \) by solving the quadratic equations , solving the square, the square \ (x ^{2}+bx+c = 0 \) Before executing the equations ai zcomplete the frame \ (ax^{2}+bx+c = 0 \), answer this from the prepared exam. Improve: \ ((x+9)^{2} \). If you missed this issue, see 5.32. example. Coefficient \ (y^{2} -14 g+49 \). If you missed this issue, see 6.9. example. Coefficient \ (5 n^{2} +40 n +80 \). If you missed this issue, see 6.14. example. So far we have solved the qualitative equations by considering and using the Square Root function. In this section, we solve the quantization equations using a process called complementary squaring, which is important for our future work with the conic. In the last section, we were able to use the square root function to solve the equation \ (y-7)^{2} = 12 \) becauseThe page was an ideal square. \ (\ bein {aligned} (y-7)^{2} & = 12 \\ y-7 & = \pm \ sqrt {12} \\ y-7 & = \pm 2 \ sqrt {3} \\ \; {2} \) Use the square root of the properties. \ (\ Start {flushed} x^{2} -10 x+25 & = 18 \\ (x -5)^{2} & = 18 \end {levelled} \) What about variable, perfect square? Can we construct the perfect square in algebra? Let's look at two examples to help us recognize patterns. \ (\ Bein {array} {cc} {(x+9)^{2}} & {(y-7)^{2}} \\ {(x+9) {(y-7) (y-7) (y-7) y-7) \\ {x^{2} +9 x+81} & {y^{2} -7 y-7 y+49} \\ {x ^{2} +18 x+81} & {y^{2} -14 y+49} \end {array} \) We repeat the pattern here as a link. If \(a\) and \(b\) are real numbers, we can use this pattern to "make" a perfect square. We start with the expression \ (x^{2} +6 x \). We use the \ ((a +b)^{2} \)-pattern because there is a plus sign between the two terms, \(a^{2} +2 a b +b^{2} = (a + b) ^^^ { 2} \). Finally, we need to find the last term of this trinomial, which makes it a perfect square trinomial. To do this we need to find \(b\). But first let's start specifying \(a\). Please note that the first term of \(x^{2}+6x \) is a square, \ (x^{2} \). This tells us that \(a = x\). What is the number of \(b\) multiplied by \(2x\) to give \(6x\)? It should be \(3\), ie \(\frac {1}{2}(6)\). So \(b = 3\). To complete the perfect quadratic triple, we find the last square term \(b \), which is \(3^{2} = 9 \). Now we can do the factoring process. So we find that adding \ (9 \) to the square \ (x^{2} +6 x \) is complete, and we write it as \ (x +3)^{2} \. Instructions: fill the square \ (x^{2}+bx \) \ (b \), define the coefficients \ (x \). Find the number \(\Left (\frac {1} {2} b \right)^{2} \) to complete the square. Add \ (\ frac {1} {2} b \ right)^{2} \) to \(x^{2}+bx \). Factor the perfect quadratic trinomial and write it as a binomial square. Fill the square to get the perfect triple square. Then write the result as a binomial square. \ (x^{2} -26 x \) \ (y^{2} -9 y \) \ (n^{2}+\ frac {1}} n \) solution: a. The coefficient of \ (x \) is -26. Find Â \ (\ Left (\ frac {1} {2} b \right)^{2} \). \ (\ Left (\ frac {1} {2} \ CDOT (-26) \ right)^{2} \) \ ((13)^{2} \) 169 â Addiere \ (169 \) a Binomial Um To complete the square. \ (X^{2} -26 x+169 \) Reals are a perfect quadratic triple term and write it as a binomial square. \ ((X-13)^{2} \) b. The coefficient \(y\) is \(-9\). To findB \ right)^{2} \). \ (\ left (\ frac {1} {2} \ cdot (-9) \ to right)^{2} \) \ (\ lewy (-\ frac {9} {2} \ to the right)^{2 } \ \ \ \ \ This) \ (\ frac {81} {4} \) Fill the square by adding \ (\ frac {81} {4} \) bicompleks. \ (y^{2} -9 y+\ frac {81} {4} \) Insert the perfect three -person square multiplier and save it as a double -length square. \ (\ left (y- \ frac {9} {2} \ to the right)^{2} \) c. The coefficient \ (n \) is equal \ (\ frac {1} {2} \). Â Find \ (\ Lewy (\ frac {1} {2} b \ to the right)^{2} \). \ (\ Lewy (\ frac {1} {2} \ cdot \ frac {1 {2} \ to the right)^{2} \) \) \) (\ frac {1} {4} \ pa good) after {16} \) for two participants to complete the area. \ (n^{2}+\ frac {1} {2} n+\ frac {1} {16} \) Rewrite two square. \ (\ left (n+\ frac {1} {4} \ to right)^{2} \) Fill the square to create the perfect square tristory. Then write the result in the form of two square. \ (a^{2} -20 a \) \ (m^{2} -5 m \) \ (p {2}+\ phrac {1} {4} p \) Answer \ (A -10)^ {2} \) \ (\ left (b- \ frac {5} {2} \ to the right)^{2} \) \ (\ left (p+\ frac {1}}}} \ to the right)^{ {{{{