Équation du second degré cours pdf

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First course In this course, we will first see a common method of solving second-degree equations. Then we'll see specific methods for solving some second- or third-degree equations. Finally, we will see a method to eliminate second-degree inequality. The resolution of the second-degree equation, the Second Degree Equation is an equation formed by the terms x2, x, and numbers. For example, the 2x2-3x-4-0 equation is a second-degree equation. Second-degree equations solve problems in the physical sciences, sciences and economics. Second, we've seen how to solve a second-degree equation when factoring is possible using a common factor or a remarkable identity: then we proceed to the product equation. Now we will learn how to solve the equations of the form of ax2-bx-0 regardless of the numbers a, b and c. Consider the equation ax2-bx-c-0. We should seek to express possible solutions to this equation in accordance with a, b and c ratios in order to obtain formulas for calculating solutions from these three coefficients. To do this, let's start by factoring the left expression to get the product equation. Technique 1. One factor on a≠0, because otherwise, it would be a first-degree equation). 2. The average term is multiplied and divided into 2, then added and subtracted in order to reveal the result of the development of the first remarkable identity. 3. Factor with the first remarkable identity and simplify what remains right. To simplify the rest of the calculations, let's ask 'b2-4ac'. (Greek letter with the inscription delta). One receives, and then by applying the distribution with A, one receives: This expression is called the canonical form of ax2-bx-c. This allows us to reveal the coordinates of The Summit S Parables: Various cases Let's take shape. We notice that: 1.'lt;0, l'quation' n'a' pas' de' solution,' car la diff'rence d'un nombre' positif' et et d'un' nombre' strictement' n'gatif' ne peut' pas q qtre' nulle.δ' δ If 0, we can make a new factor, this time with the help of a third remarkable identity. First we show the difference in two squares: Then we factor: . The expression is called the factor form ax2-bx-c. By solving factor expression (this is an equation-product), you get two solutions that are and. To solve the ax2-bx-c-0 form equation, we could do all the higher calculations by replacing a, b and coefficients of our equation, which are zlt/0, qgt;but it's going to be a very long time. To save time, the above formulas will be used directly by the following method: 1. The number of b2-4ac is calculated. 2. We look at the delta sign. -'lt;0, l'quation' n'a' pas' de' solution.' - si' δ' δ' q δ' poss'de' une solution' que' l'on' calcule' calcule' avec' la formule . - si' δ' Sample equation -2x2-3x-4-0: 1. We're calculating the delta. . 2. Since the delta is positive, there are two solutions: and . Special cases: from a well-known solution, we will now see two methods that allow us to quickly calculate the second solution of the second degree equation, without the use of heavy calculations 'and x2', when we can guess the first solution. The second method solves some third-degree equations, as we shall see. Finally, we'll see how to solve some fourth-degree equations. With the amount or product of the roots If the equation has two solutions, then their amount is made and their product makes (demonstration). If we guess the solution, we can calculate the other using one of these formulas. For example, for x2-5x-6-0, we notice that x-1 is the solution. Since the amount of decisions is -5/1-5, we have 1 x2-5 so x2-6. If the equation has two solutions, then their amount is made, and their product makes a demonstration (hide), so that we can calculate the other solution with one or the other of these formulas. For example, for x2-5x-6-0, we notice that x-1 is the solution. As the amount of decisions made -5/1, another solution -5. If the equation has two solutions x1 and x2, the equation is taken into account in (x-x1) (x-x2)0. If someone knows one solution, you can calculate another by developing this factor form. For example, since 1 is a solution x2-5x-6-0, x2-5x-6 (x-1) (x-x2) is taken into account. Let's develop (x-1) (x-x2): (x-1)(x-x2)-x2-x2-x2, which makes x2-(x2-1)x-x2. By determining (comparing) this result with x2-5x-6, you get x2-6. Using the same technique, you can find solutions to the ax3-bx2-cx-d-0 form equation from a well-known x1 solution. In fact, ax3-bx2-cx-d-0 is then counted in (x-x1) (ex2-fx-g)-0. So x-x1-0 or ex2-fx-g-0 and we know how to solve it all. For example, for the equation x3-2x2-3x-6-0, we notice that 2 is the solution. x3-2x2-3x-6-0 is thus counted in (x-2) (ax2-bx-c)-0. Let's develop: (x-2) (ax2-bx-c) - ax3-bx2-cx-2ax2-2bx-2c - ax3 (b-2a)x2 (c-2b)x-2c-0. By identification, one receives A-1, B-2a-2, C-2b-3 and -2c-6, of which A-1, B-0 and C-3. This has yet to be resolved (x-2)(x2-3)-0. Since x2-3-0 has no solution, x3-2x2-3x-6 has only one solution. Now we're going to learn how to learn how to learn how to learn.inequality in the second degree. This is the unfairness of the form ax2-bx≤0, ax2-bx-c'lt;0, ax2-bx'c or ax2-bx≥0, for this let's start with the f (x)ax2-bx-c curve according to its odds. The curve of the F curve (x)-ax2-bx-c Curve A is represented by a curve called parable. If the number has in front x2 is positive, the top is down and the branches are included. Otherwise it's the other way around. The parable touches the axis of abscess as many times as the ax2-bx-0 equation has solutions. To eliminate second-degree inequality: 1. Equation resolved. The contour of the curve can be traced in the project. Decisions are read graphically. An example of inequality x2-x-1≥0. 1. The equation is solved by x2-x-1-0. We get two solutions: and. 2. and are positive. Curve like: 3. We take x values for which the curve is above the absiss axis. The number of degree degrees received in cmath.fr, video courses, exercises on the same topic - Third Course in Equations. To learn how to solve the first-degree equation. Third course on inequality. To learn how to solve the first degree of inequality. Second course on equations. To learn how to solve certain second-degree equations. Second course on inequality. To learn how to address certain second-degree inequalities by using the sign board. Second course on equation systems. To learn how to solve a system of two equations with two unknowns. Mathematical course: Equations and unfairness of second-degree equations: either f function of a polynema degree 2 form: f (x) - x 2 - b x - c where a, b and c three real with ≠ 0.The actual number, equal to b 2-4 a c, is called discrimination f. Property: qlt; 0 q alors' l'quation' f' (x) q'0 n'admet' aucune' solution' r'elle.' f'ne' peut' pas s'crire' sous' forme' factoris'e δ. 0'-b 2a ' . . la' forme' factoris'e' de f' f' est' f' δ (x) If '0', the f (x) '0) equation has two solutions x '-b' - '2a' and 'x 2' -b'--'2a'. Factor form f (x) a (x - x 1) (x - x 2) Notes: Solutions of equation x 2 'b x' c'0 are called the roots of the triin x 2 'b x' c - Solutions, when they exist, are abscisesses of the crossing points of the curve with abscissus (see table). If 'gt;0 If '0' If 'Examples: a' Solve the equation 2x2 - 5x - 3 - 0 Solution: '2', 'b' -5 and 'c'. B2 - 4ac </0,>25- (-24) - 25-24 - 49 - qgt;0, so the equation allows 2 decisions. x 1 - 5 - 49 2×2 x 1 - 5 - 7 - 4 - -2 4 - -1 2 x 2 - 5 - 49 2×2 x 2 - 5 - 7 4 - 12 - 4 - 3 Equation 2x2 - 5x - 3 - admits two solutions: -1/2 and 3. 2x2 - 5x - 3-2 (x-1/2) (x-3). b) Solve the equation 9x2 - 12x - 4 - 0 Solution: a - 9, b - -12 and c - 4. B2 - 4ac (-12)2 - 4×9×4 - 144-144 - 0 - 0, so the equation allows 1 decision. x 0 - 12 2×9 - 12 18 - 2 3 Equation 9x2 - 12x - 4 - 0 admits solution: 2/3 9x2 - 12x - 4 - 9 (x - 2/3)2. c) Solve the equation x2 - 2x - 5 - 0 Solution: a - 1, b - 2 and c - 5. B2 - 4ac - 22 - 4×1×5 - 4 - 20 - -16 - zlt; 0, so the equation does not allow any real solution. Calculator Use: - With Equa mode casios model: 1) Select the menu equalizer 2) Select polynomial type (f2) 3) Select degree 2 (f1) 4) Give values a, b and c 5) Get solutions with solution (f1) - zgt; With Solver IT models: 1) Select mathematical menu 2) Select Solver function (0) 3) ax2 - bx - c then enter 4) alpha then enter (resol) WARNING !!! As can be seen from this example, the solution refers only to one of two solutions of the algorithm: to overcome the problem of the solution, it is possible and appropriate to program an algorithm that will give value to the discriminator, as well as the possible roots of the trio of the second degree. Enter a,b,c b2 - 4ac -Show DELTA and then: -b - -2a --gt; x 1 -b - 2a -2a -2a -gt; x 2 Show Two Solutions: x1, x2 Otherwise, if (-0) then: -b 2a --gt; View Solution: x0 Others, Show No Real Solution. Casio A?→A B→B C?→C DELTA B2-4AC→D if D'gt;0, then 2 SOLUTIONS X1 (-B-√D) ÷ (2A) →X X2 (-B-√D)÷ (2A)→D 1 SOLUTION X0-B÷ (2A)→X Else SOLUTION PAS ifEnd TI prompt A,B,C B2-4AC→D Disp DELTA'gt;D Then (-B-√(D)/ /(2A)→X (-B-√(D)//2A) →y Disp 2 Solutions Xp, Y Else If D-0 Then Dis 1 SOLUTION -B/ (2A)→X Disp X Else Disp SOLUTION PAS End Of The Second Degree Trinam Property Sign: Either F Degree 2 polynome form function: f (x) - x 2 - b x - c ≠ 0. f always mark except between the roots of the triny, if they exist. If '0': If "gt;0: Examples: a) Allow the inequality of x2 - 8x - 9 qgt; 0 Solution : '1 '1 'b' -8 and 'c'9.' b2 - 4ac --8)2 - 4×1× (-9) - 64-(-36) - 64 - 36 - 100 - qgt; 0, so the equation x2 - 8x - 9 - 0 admits 2 solutions: x 1 - 8 - 100 2×1 x 1 - 8 - 10 2 - -2 - -2 2 1 x 2 - 8 - 100 2×1 x 2 - 8 - 10 2 - 18 2 - 9 Equation x2 - 8x - 9 - 0 admits two In: -1 and 9. Since is positive, F is positive everywhere except between -1 and 9. Thus, S --∞;-1U 9;-∞)) Allow inequality -3x2 - 2x - 1 zlt; 0 Solution: a -3, b -2 and c - -1. (b2 - 4ac) - 4× (-3)× (-1) - 4-12 - -8 - zlt; 0, so the equation -3x2 - 2x - 1 - 0 does not allow any solution and -3x2 - 2x - 1 is always a sign a, regardless of the value of x, so -3x2 - 2x - 1 is always less than 0. So S --∞;∞ R R résoudre une équation du second degré cours. cours sur équation du second degré. cours résolution d'équation du second degré. équation du second degré à une inconnue cours. équation du second degré cours 3ème. équation du second degré cours seconde. équation du second degré cours formule. équation du second degré cours et exercices

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