

## Free reading Module 4 quadratic relations and systems of equations (2023)

we've seen linear and exponential functions and now we're ready for quadratic functions we'll explore how these functions and the parabolas they produce can be used to solve real world problems 19 6k subscribers subscribed 167 21k views 12 years ago quadratic relations this video shows how to graph a quadratic relation using a table of values some basic properties of nerdstudy 84 7k subscribers subscribed 3 1k 184k views 7 years ago algebra 2 and geometry grade 10 math nerdstudy visit nerdstudy.com for more lessons intro to quadratic relations to solve a quadratic equation use the quadratic formula  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$  what is the quadratic formula the quadratic formula gives solutions to the quadratic equation  $ax^2 + bx + c = 0$  and is written in the form of  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$  quadratic formula  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$  put in a b and c  $x = \frac{-6 \pm \sqrt{6^2 - 4(5)(1)}}{2(5)}$  solve  $x = \frac{-6 \pm \sqrt{36 - 20}}{10} = \frac{-6 \pm \sqrt{16}}{10} = \frac{-6 \pm 4}{10}$  or  $x = \frac{-6 + 4}{10} = \frac{-2}{10} = -\frac{1}{5}$  or  $x = \frac{-6 - 4}{10} = \frac{-10}{10} = -1$  and we see them on this graph answer  $x = 0$  or  $x = 1$  let's check the answers in this section we will solve quadratic equations by a process called completing the square which is important for our work on conics later 9 3e exercises 9 4 solve quadratic equations using the quadratic formula quiz unit test about this unit we'll now progress beyond the world of purely linear expressions and equations and enter the world of quadratics and more generally polynomials learn to factor expressions that have powers of 2 in them and solve quadratic equations we'll also learn to manipulate more general polynomial expressions quadratic relation a quadratic relation in two variables is a relation that can be written in the form  $y = ax^2 + bx + c$  or  $x = ay^2 + by + c$  where a b and c are real numbers and a  $\neq 0$  the graphs of quadratic relations are called parabolas the simplest quadratic relation of the form  $y = ax^2 + bx + c$  is  $y = x^2$  with a 1 b 0 and c 0 so this relation is 362 42k views 15 years ago quadratic relations this lesson examines the properties of the quadratic function in intercept or factored form  $y = a(x - r)(x - s)$  this is one of a series of a quadratic function is a polynomial function of degree 2 which can be written in the general form  $f(x) = ax^2 + bx + c$  here a b and c represent real numbers where a  $\neq 0$  the squaring function  $f(x) = x^2$  is a quadratic function whose graph follows figure 6 4 1 unit 1 basic properties of quadratic relations unit 2 algebraic representations of quadratic relations unit 3 algebraic skills unit 4 graphing quadratic relations unit 5 solving problems involving quadratic relations quadratic relation is a type of relationship where the second differences within y coordinates are equal this type of relation is represented by a parabola on a graph a parabola is always u shaped a parabola has a vertex which is the maximum or minimum point of the parabola  $f(x) = a(x - h)^2 + k$   $f(x) = a(x - 1)^2 + 1$  then we calculate a we know the point (0, 1.5) so  $f(0) = 1.5$  and  $a(x - 1)^2 + 1$  at  $x = 0$  is  $f(0) = a(0 - 1)^2 + 1 = a(1) + 1 = a + 1$  they are both  $f(0) = 1.5$  so make them equal  $a + 1 = 1.5$  simplify  $a = 1.5 - 1 = 0.5$  and here is the resulting quadratic equation unit 8 functions part 2 unit 9 piecewise absolute value inverse functions unit 10 introduction to exponential functions unit 11 analyzing exponential functions unit 12 introduction to quadratic functions unit 13 quadratic equations part 1 unit 14 quadratic equations part 2 unit 15 quadratic equations part 3 find the vertex of the quadratic function  $f(x) = 2x^2 - 6x + 7$  rewrite the quadratic in standard form vertex form solution the horizontal coordinate of the vertex will be at  $-\frac{b}{2a} = -\frac{-6}{2(2)} = \frac{6}{4} = \frac{3}{2}$  end align the vertical coordinate of the vertex will be at lesson 1 exploring quadratic relations homework pg 172 1 4 use desmos to graph the equation using a table of values file size 378 kb file type pdf download file exploring quadratic relations complete file size 1705 kb file type pdf download file exploring quadratic relations summary note file size 283 kb file type pdf this follows chapter 4 and free lessons worksheets and video tutorials for students and teachers topics in this unit include graphing quadratics standard form vertex form factored form converting to vertex form by completing the square determining the equation of a quadratic from its graph study with quizlet and memorize flashcards containing terms like axis of symmetry completing the square complex conjugates and more

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