Quadratic function graphing rules

Nejprve musíme nakreslit graf pro danou kvadratické rovnici. Chcete-li vyřešit druhou kvadratickou rovnici pomocí první rovnice, musíme odečíst druhou rovnici od první rovnice. Takže máme přímku. Kořeny kvadratické rovnice můžeme určit graficky výběrem vhodné paraboly a protínáme ji s požadovanou přímkou. i Pokud přímka protíná parabolu ve dvou odlišných bodech, pak x souřadnice těchto bodů budou kořeny dané kvadratické rovnice. ii) Pokud se přímka dotkne paraboly pouze v jednom bodě, pak souřadnice x společného bodu bude jediným kořenem kvadratické rovnice. (iii) Pokud se přímka neprotíná ani nedotýká paraboly, pak kvadratická rovnice nebude mít žádné skutečné kořeny. Example 1 :Draw the graph of y = x2 + 3x - 4 and hence solve x2 + 3x - 4 = 0Solution :Now, let us draw the graph of y = x2 + 3x - 4 x-4-3-2-101234 x216941014916 3x-12-9-8-3036912 -4-4-4-4-4-4-4-4-4-4 y0-4-8-6-4061424 Points to be plotted :(-4, 0) (-3, -4) (-2, -8) (-1, -6) (0, -4) (1, 0) (2, 6) (3, 14) (4, 24)To find the x-coordinate of the vertex of the parabola, we may use the formula x = -b/2ax = -3/2(1) = -3/2By applying x = -3/2, we get the value of y.y = (-3/2)2 + 3(-3/2) - 4y = 9/4 - (9/4) - 4y = -4Vertex (-3/2, -4) y = x2 + 3x - 4 ------(1)0 = x2 + 3x - 4 ------(2)(1) - (2) y = x2 + 3x - 4 ------(1) 0 = x2 + 3x - 4 ------(2) (-) (-) (-) (-) ---------- y = 0 y = 0 means x-axis. Parabola protíná osu x ve dvou bodech 4 a 1. Hence the solutions are -4 and 1.Example 2 :Draw the graph of y = x2 −5x −6 and hence solve x2 −5x −14 = 0Solution :Now, let us draw the graph of y = x2 - 5x - 6 x-4-3-2-101234 x216941014916 -5x20151050-5-10-15-20 -6-6-6-6-6-6-6-6-6-6 y301880-6-10-12-12-10 Points to be plotted :(-4, 30) (-3, 18) (-2, 8) (-1, 0) (0, -6) (1, -10) (2, -12) (3, -12) (4, -10)To find the x-coordinate of the vertex of the parabola, we may use the formula x = -b/2ax = -(-5)/2(1) = 5/2By applying x = 5/2, we get the value of y.y = (5/2)2 - 5(5/2) - 6y = 25/4 - (25/2) - 6y = (25 - 50 - 24)/4y = -49/4Vertex (5/2, -49/4) y = x2 −5x −6 ------(1)0 = x2 −5x −14 ------(2)(1) - (2) y = x2 −5x −6 ------(1) 0 = x2 −5x −14 ------(2) (-) (-) (+) (+) ---------- y = 8 Hence the parabola and the line intersect at two points -2 and 7 on the x-axis. Hence the solutions are -2 and 7.Example 3 :Draw the graph of y = 2x2 − 3x − 5 and hence solve 2x2 − 4x − 6 = 0Solution :Let us draw the graph of y = 2x2 − 3x − 5 x-2-101234 2x2820281832 -3x630-3-6-9-12 -5-5-5-5-5-5-5-5-5 y90-5-6-3415 Points to be plotted : (-2, 9) (-1, 0) (0, -5) (1, -6) (2, -3) (3, 4) (4, 15)To find the x-coordinate of the vertex of the parabola, we may use the formula x = -b/2ax = -(-3)/2(2) = 3/4By applying x = 3/4, we get the value of y.y = 2(3/4)2 − 3(3/4) − 5y = 18/16 - (12/4) - 5y = (18 - 48 - 80)/16y = -110/16Vertex (3/4, -110/16) y = 2x2 − 3x − 5 ------(1)0 = 2x2 − 4x − 6 - (2) y = 2x2 − 3x − 5 ------(1) 0 = 2x2 − 4x − 6 ------(2) (-) (-) (-) (+) ---------- = x + 1 Draw a line in the same chart to get the dish and intersect the line in two points -1 and 3. Hence the solutions are -1 and 3.Example 4 :Draw the graph of y = (x − 1)(x + 3) and hence solve x2 − x − 6 = 0Solution :y = (x − 1)(x + 3) y = x2 + 3x - x - 3y = x2 + 2x - 3 x-2-101234 x241014916 2x-4-202468 -3-3-3-3-3-3-3-3-3 y-3-4-3051221 Points to be plotted : (-2, -3) (-1, -4) (0, -3) (1, 0) (2, 5) (3, 12) (4, 21)To find the x-coordinate of the vertex of the parabola, we may use the formula x = -b/2ax = -2/2(1) = -1By applying x = -1, we get the value of y.y = (-1)2 + 2(-1) - 3y = 1 - 2 - 3y = -4Vertex (-1, -4) y = x2 + 2x - 3 ------(1)0 = x2 − x − 6 ------(2)(1) - (2) y = x2 + 2x - 3 ------(1) 0 = x2 − x − 6 ------(2) (-) (-) (+) (+) ---------- y = 3x + 3 y = 3(x + 1)By drawing a line in the same graph , we get the dish and the line intersects in two points -2 and 7. Therefore, the solutions are -2 and 7. In addition to the things listed above, if you need any other things in math, please use our google custom search here. If you have any comments about our mathematical content, please write to us: v4formath@gmail.com We always appreciate your feedback. You can also visit the following websites about different things in mathematics. WORD PROBLEMSHCF and LCM word problemsSlovural problems on simple equations Problems with word on linear equations Problems with word on quadratic equationsAlgebra problems With word problems with swallow and circuit communicationSloval problems with direct variation and in reverse variation of Word problems to unit priceSloval problems with unit rate Problems with word when comparing ratesJudicating common units verbal problems Conversion of metric units of verbal problemsSlovical problems with simple interestSloval problems with compound interestSloval problems with compound interestSloval problems with cross and additional angles word problemsDble facts word problemsTrigonometry word problemsProcent word problems Profit and loss word problems Markup and markdown word problems Decimal word problemsProblems to fractionAl problems on mixed fractrionsOne step equation word problemsLinear inequality word problemsRatio and proportions of problems with wordTime and problems with the working wordSpeaks problems on sets and venn diagramsSpeal problems with problems in agePythagorean sentences With the wordProcent a number of problems With the word Problems with constant speedLslaved problems with the average speed of Word to the sum of triangle angles is 180 degreesOHOX TOPICS Gain and loss of abbreviationTimes shortcuts table abbreviationsTime, shortcuts speed and distanceRatio and proportional abbreviationsDomina and range of rational functionsDomains and range of rational functions with holesGraphic rational functionsDemicing rational functions with holesConferring repeating decimal places into fractionsSeemed representation of rational numbersNavadka to root a powerful root long divisionL.C.M methods for solving time and work problemsSake problemsSakeing word problems in algebraic expressionsRemainder when 2 power 256 is divided

by 17Remainder at 17 power 23 is divided by 16Sum of all three digit numbers divisible by 6Sum of all three digitnumbers divisible by 7Sum of all three digitnumbers divisible by 8Sum of all three digits created using 1, 3, 4Sum all three four-digit numbers created with non-zero digitsSum all three four-digit numbers created using 0, 1, 2, 3Sum all three four-digit numbers created using 1, 2, 5, 6 author's onlinemath4all.com SBI! Learning Results Graph of vertical and horizontal displacements of quadratic functions Vertical compression graph and sections of quadratic functions Write an equation of transformed quadratic functions using the vertex shape Identify vertex and symmetry axis for a given quadratic function in the form of vertices Standard form k thevadratic function represents a function in the form [latex]f\left(x\right)=a{\left(x-h\right)}^{2}+k[/latex], where [latex]\left(h,\text{ }k\right)[/latex] is the vertex. Because the vertex appears in the standard form of a quadratic function, this form is also referred to as the quadratic function vertex form. A standard form is useful for determining how to transform a chart from a [latex]y={x}^{2}[/latex] chart. The figure below is a graph of this basic feature. Shift Up and Down by changing the value [latex]k[/latex] You can represent the vertical (up, down) offset of the graph [latex]f(x)=x^2[/latex] by adding or subtracting the constant [latex]k[/latex]. [latex]f(x)=x^2 + k[/latex] If [latex]k>0[/latex], the chart moves up, while if [latex]k<0[atex],= the= graph= shifts= downward.= determine= the= equation= for= the= graph= of= [latex]f(x)=x^2[/latex] that= has= been= shifted= up= 4= units.= also ,= determine= the= equation= for= the= graph= of= [latex]f(x)=x^2[/latex] that= has= been= shifted= down= 4= units.= shift= left= and= right= by= changing= the= value= of= [latex]h[/latex]= you= can= represent= a= horizontal= (left,= right)= shift= of= the= graph= of= [latex]f(x)=x^2[/latex] by= adding= or= subtracting= a= constant,= [latex]h[/latex],= to= the= variable= [latex]x[/latex],= before= squaring.= [latex]f(x)=(x-h)^2 [/latex]= if= [latex]h=>0[/latex] shifts the chart to the right and if [latex]h<0[atex] ,= the= graph= shifts= to= the= left.= determine= the= equation= for= the= graph= of= [latex]f(x)=x^2[/latex] that= has= been= shifted= right= 2= units.= also,= determine= the= equation= for= the= 2=graph= of= [latex]f(x)=x^2[/latex] that= has= been= shifted= left= 2= units.= stretch= or= compress= by= changing= the= value= of= [latex]a[/latex].= you= can= represent= a= stretch= or= compression= (narrowing,= widening)= of= the= graph= of= [latex]f(x)=x^2[/latex] by= multiplying= the= squared= variable= by= a= constant,= [latex]a[/latex].= [latex]f(x)=ax^2 [/latex]= the= magnitude= of= [latex]a[/latex]= indicates= the= stretch= of= the= graph.= if= [latex]|a|=>1[/latex], the point associated with a certain value [latex]x[/latex] moves further [latex]x[/latex] axis, so the chart appears to become </0[> </0[> </0[> and there is a vertical section. However, if [latex]|a|<1[/latex] moves to [latex]x[/latex], the chart zooms in on the [latex]x[/latex] axis, so that the chart appears to be wider, but in reality there is vertical compression. Specify an equation for the [latex]f(x)=x^2[/latex] chart that has been compressed vertically by the [latex]\frac{1}{2}[/latex] factor. Also specify an equation for the chart [latex]f(x)=x^2[/latex] that has been vertically stretched by a factor of 3. A standard form and a generic form are equivalent methods for describing the same function. We can see this by expanding the general form and setting it as a standard form. [latex]\begin{align}&a{\left(x-h\right)}^{2}+k=a{x}^{2}+bx+c\\ &a{x}^{2}-2 2ahx +\left(a{h}^{2}+k\right)=a{x}^{2}+bx+c\end{align}[/latex] For both sides to equalize, the corresponding coefficients must be the same. In particular, the coefficients [latex]x[/latex] must be the same. [latex]-2ah=b,\text{ so }h=-\dfrac{b}{2a}[/latex]. This is the coordinate [latex]x[/latex] of the vertex, and [latex]x=-\dfrac{b}{2a}[/latex] is the axis of symmetry that we defined earlier. Setting constant conditions equal gives us: [latex]\begin{align}a{h}^{2}+k&=c \\[2mm] k&=c-a{h}^{2} \\ &=c-a-{\left(\dfrac{b}{2a}\right)}^{2} \\ &=c-\dfrac{{b}^{2}}{4a} \end{align}[/latex] In practice, however, it is usually easier to realize that [latex]h[/latex] is the output value of a function. when the input is [latex]h[/latex], so [latex]f\left(h\right)=f\left(-\dfrac{b}{2a}\right)=k[/latex]. The coordinate grid was covered by the quadratic basketball track in the image below. Find the equation for the path of the ball. Does the shooter make a basket? (credit: modification of dan meyer's work) Contribute! Did you have an idea to improve this content? We'd like you to get into it with a good time. Improve this page Learn more