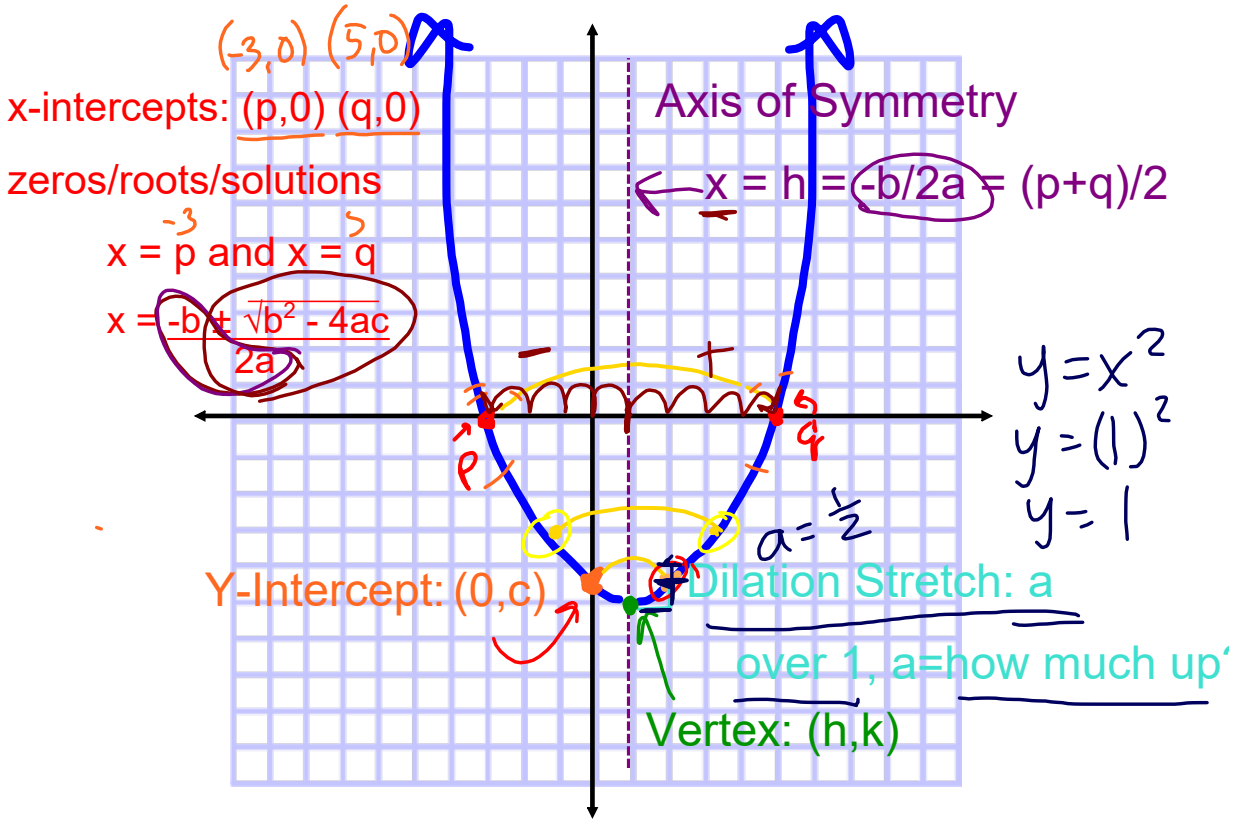
Quadratic Forms

Recognizing

2/8/2021

Vertex Form	Intercept Form	Standard Form
$f(x) = a(x-h)^2 + k$	$f(x) = a(x-p)(x-q)$	$f(x) = ax^2 + bx + c$
Vertex: (h,k) h- horizontal shift k- vertical shift **Dilation: a** a is negative: Reflection 0< a < 1 : shrink a > 1 : stretch Axis of Symmetry: x = h	**X intercepts/** Solutions/Roots/Zeros: **x = p and x = q** Dilation: a Axis of Symmetry: Half way between the roots $x = h = \frac{p+q}{2}$ To find Vertex: input the axis of symmetry x value, h, in the function, the y value will be the k	Dilation: a Y Intercept: (0,c) Axis of Symmetry: $x = h = \frac{-b}{2a}$ To find Vertex: input the axis of symmetry x value, h, in the function the y value will be the k X intercepts/Roots $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Easily Translatable and Graphable	Factor to find this form, or turn solutions into factors	Find vertex and turn into vertex form

All the Pieces of the function from each Form



Which Form is it in?

f(x) = 2(x - 4)² + 7

Vertex

V: (4,7)

f(x) = 1/2(x - 3)(x + 2)

Intercept $x+2=0$, $-2\ -2$

$x = 3$ $x = -2$

f(x) = -16x² + 32x + 60

Standard $a=-16$

yint: (0,60) $b=32$

$c=60$

1) 0= -8(4x - 3)(7x + 5)

Intercept $7x+5=0$, $-5\ -5$, $\frac{7x}{7} = \frac{-5}{7}$

$x = \frac{3}{4}$ $x = -\frac{5}{7}$

2) f(x) = -3(x - 5)(x-5) +0

Vertex : V:(5,0)

Intercept: x=5 twice

3) f(x) = -5/3(x)² + 5

Standard yint(0,5)

Vertex V:(0,5)

4) f(x) = -0.75x² - 3x

Standard yint(0,0)

5) f(x) = 4(x+6)² - 8

Vertex V:(-6,-8)

Which Form is it in?

Homework

$0 = -7(3x - 1)(x - 2)$

$f(x) = 4(x - 9)^2$

$f(x) = -(x - 3)^2 + 14$

$f(x) = -75x^2 + 25x$

$f(x) = (x + 7)(x + 9)$

$f(x) = -1/8(x + 2)^2 - 5$

$f(x) = 7/4x^2 - 6$

$f(x) = -5x^2 + 7x + 6$

Which Form is it in?

Homework

Answers

$0 = -7(3x - 1)(x - 2)$ Intercept $x = \frac{1}{3}$ $x = 2$

$f(x) = 4(x - 9)^2$ Vertex $V(9,0)$ or Intercept $x = 9$ twice

$f(x) = -(x - 3)^2 + 14$ Vertex $(3, 14)$

$f(x) = -75x^2 + 25x$ Standard y-int $(0,0)$

$f(x) = (x + 7)(x + 9)$ Intercept $x = -7$ $x = -9$

$f(x) = -1/8(x + 2)^2 - 5$ Vertex $(-2, -5)$

$f(x) = 7/4x^2 - 6$ Standard $y = \frac{7}{4}x^2 + 0x - 6$ or Vertex $\frac{7}{4}(x-0)^2 - 6$ y-int $(0, -6)$ $V: (0, -6)$

$f(x) = -5x^2 + 7x + 6$ Standard y-int $(0, 6)$