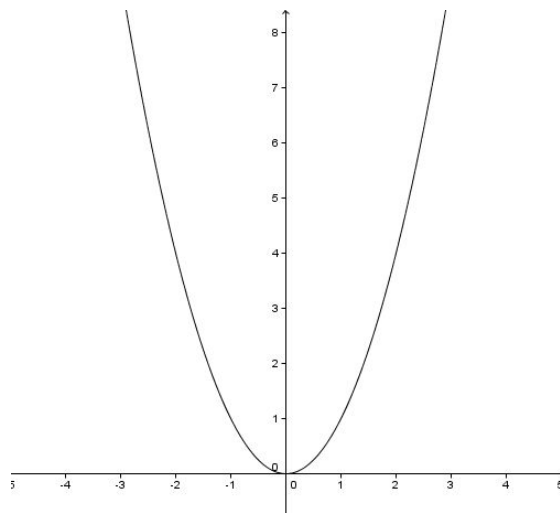


QUADRATIC RELATIONS - BASICS

The degree of any quadratic relation is 2 (highest exponent)



Simplest equation: $y = x^2$

FORMS OF QUADRATIC EQUATION

STANDARD

$$y = ax^2 + bx + c$$

FACTORED

$$y = a(x - s)(x - r)$$

VERTEX

$$y = a(x - h)^2 + k$$

For $y = x^2$

Finite Differences

x	y
-3	9
-2	4
-1	1
0	0
1	1
2	4
3	9

1st	2nd
-5	2
-3	2
-1	2
1	2
3	2
5	2

PARABOLA
 HAS VERTEX (MAX or MIN)
 SYMMETRICAL (AXIS OF SYMMETRY)
 HAS Y-INTERCEPT
 HAS X-INTERCEPTS (1, 2 or NONE)
 OPENS UP OR DOWN
 OPTIMAL VALUE - Y-VALUE OF THE VERTEX

To determine the x -value of the Vertex, add the x -intercepts and divide by two

If $a > 0$, parabola opens up
 If $a < 0$, parabola opens down

APPLICATIONS OF QUADRATICS

1. Height vs Horizontal Distance
2. Height vs Time
3. Area and Dimensions
4. Integer relations
5. Revenue

