

Module 3

Wednesday, 15 September 2021 11:04 am

Quadratic Functions

- Parabola - U- shaped curve
- Vertex - Extreme point
- Minimum Values - Parabola open up
- Maximum Value - Parabola opens down
- Axis of Symmetry - Vertical line drawn through the vertex

Formulas:

- $f(x) = ax^2 + bx + c$; general form of Quadratic Function
- $x = \frac{-b}{2a}$; Axis of symmetry
- $h = -\frac{b}{2a}$  Vertex in general form
- $k = \frac{4ac - b^2}{4a}$
- $f(x) = a(x - h)^2 + k$; standard form of a quadratic function
- (h, k) = Vertex form of a quadratic function
- $(a > 0)$ parabola opens upward and the vertex is a minimum
- $(a < 0)$ parabola open downward and the Vertex is a maximum
- $(k > 0)$ Upward
- $(k < 0)$ Downward
- $(h > 0)$ To the right
- $(h < 0)$ To the left

Determining Maximum and minimum Values

Step 1: Determine whether graph is going upward or downward; whether its minimum or maximum value

Step 2: Determine vertex

Step 3: determine the value of minimum and axis of symmetry (occurs at...)

Finding the Equation

Step 1: pic any vertex

Step 2: Make the Equation

Step 3: Make three equation using Step 1 & 2

Step 4: Substitute values of © to equation 1 & 3

Step 5: Use Elimination method to find of a (+)

NOTE: If cannot find (a) multiply equation with a number and subtract it with the same #

Step 6: Substitute the values of (a) and (c) in either equation 1 or 3

Step 7: Make the quadratic Function

Zero $(x - m)(x - n)$

Step 1: Substitute

Step 2: Foil