**Quadratic Functions in Vertex Form**

A **quadratic function** can be written in different forms.

Ex : Standard form ex :   
 Factored form ex :

The **Vertex Form** looks like :

Ex : 🡪

🡪

🡪

When a quadratic function is in Vertex Form,  **and are the coordinates of the vertex.**

Ex : 🡪 vertex :

🡪 vertex :

🡪 vertex :

Coefficient still tells us the direction of the opening and its “speed”.



Example 1 :

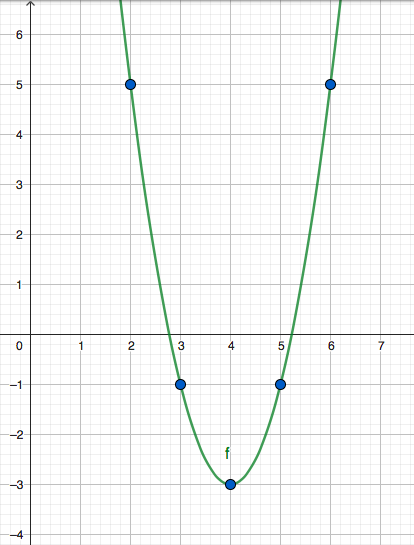
Example 2 :



From the vertex, you can use the “speed of opening” compared to the reference quadratic function of a table of values (choosing preferably one side of the vertex)…

**Note** : If you know the sign of and the direction of opening ,   
 you can easily know the number of -intercepts  
   
 Ex : If and ,   
  
 If and ,

**Determining an equation of a parabola** :   
If you can see the coordinates of the vertex on a graph, the easiest is to use the vertex form:



**Hwk : p 157 # 4, 7, 8, 9, 12, 15, 16, 18, 20 + 21**