Graphing Quadratic Functions

$y = f(x) = ax^2 + bx + c$

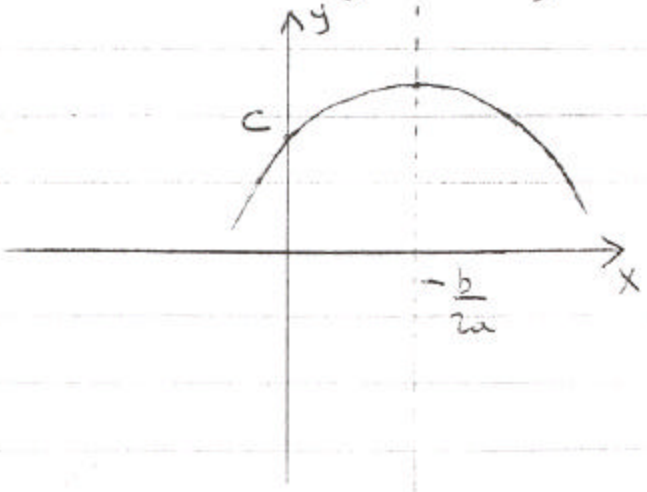
① This is a quadratic function. It graphs as a parabola. If $a > 0$, it opens up. If $a < 0$, it opens down.

② $f(0) = c = y$ intercept

③ $x = \frac{-b}{2a}$ is the axis of symmetry.

$y_{vertex} = y_v = f\left(-\frac{b}{2a}\right)$

④ Pick a couple of values of x on one side of the axis of symmetry. Make a table of values. Plot the points, and mirror them across the axis of symmetry.



Here $a < 0$.

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

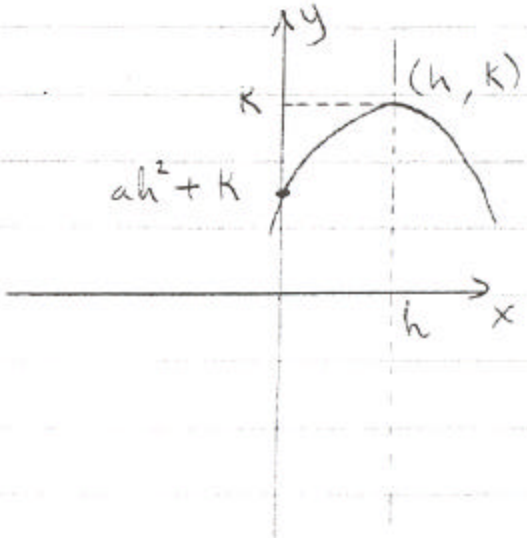
① Same

② $f(0) = ah^2 + K = y$ intercept

③ $x = h$ is the axis of symmetry.

$y_{vertex} = y_v = K$

④ Same



Here $a < 0$.