Worksheet 4-6: Quadratic Relations $y = a(x - h)^2 + k$

Review:

For each of the following parabolas,
(a) state the coordinates of the vertex.
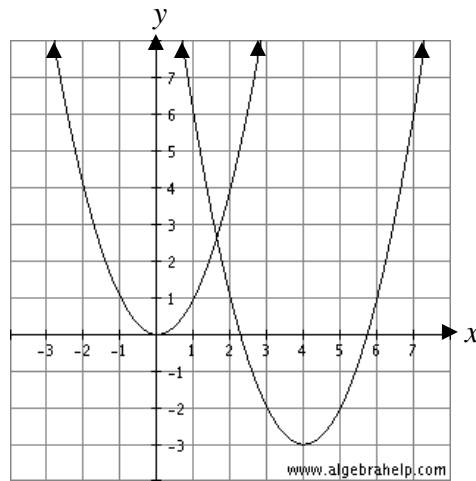**(b) state the direction of the opening.**

(i) $y = -3x^2$ **(ii)** $y = x^2 + 2$ **(iii)** $y = -(x - 4)^2$ **(iv)** $y = 2(x + 5)^2 - 3$
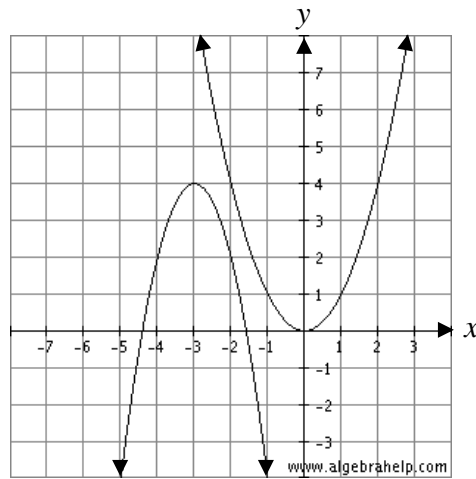
Investigation : $y = a(x - h)^2 + k$

(a) Graph $y = x^2$ **and** $y = (x - 4)^2 - 3$ **on the same axes.**

Compare the two parabolas, and describe the transformation.

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Assigned Work: WS 4-6; p. 212 #1, #4-6, #8

(b) Graph $y = x^2$ **and** $y = -2(x+3)^2 + 4$ **on the same axes.**
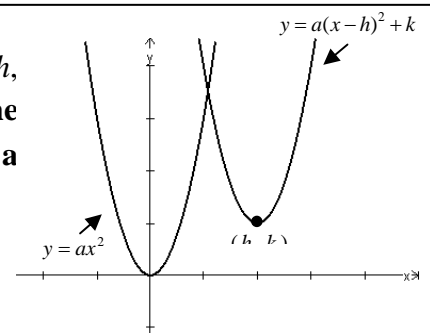
Compare the two parabolas, and describe the transformation.

The graph of the quadratic relation $y = a(x-h)^2 + k$ (where a, h, and k are real numbers and a is not zero) **can be obtained from the graph of** $y = ax^2$ **by a vertical translation of** k **units and a horizontal translation of** h **units.**
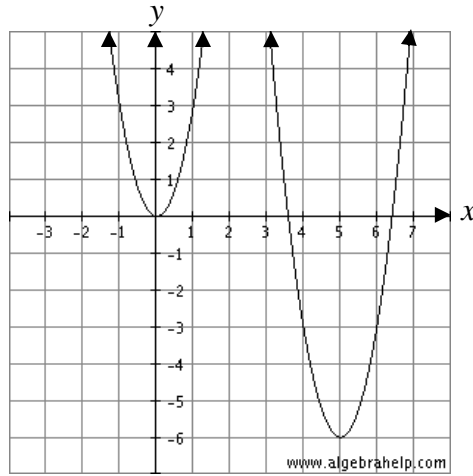
The vertex of $y = a(x-h)^2 + k$ **is at** (h, k).

It opens upward if $a > 0$ **, downward if** $a < 0$.

(c) Graph $y = 3x^2$ **and** $y = 3(x-5)^2 - 6$ **on the same axes.**

Compare the two parabolas, and describe the transformation.

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1. **For each of the following parabolas, state the vertex, axis of symmetry and equation for the quadratic relation.**

(a)

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(b)

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