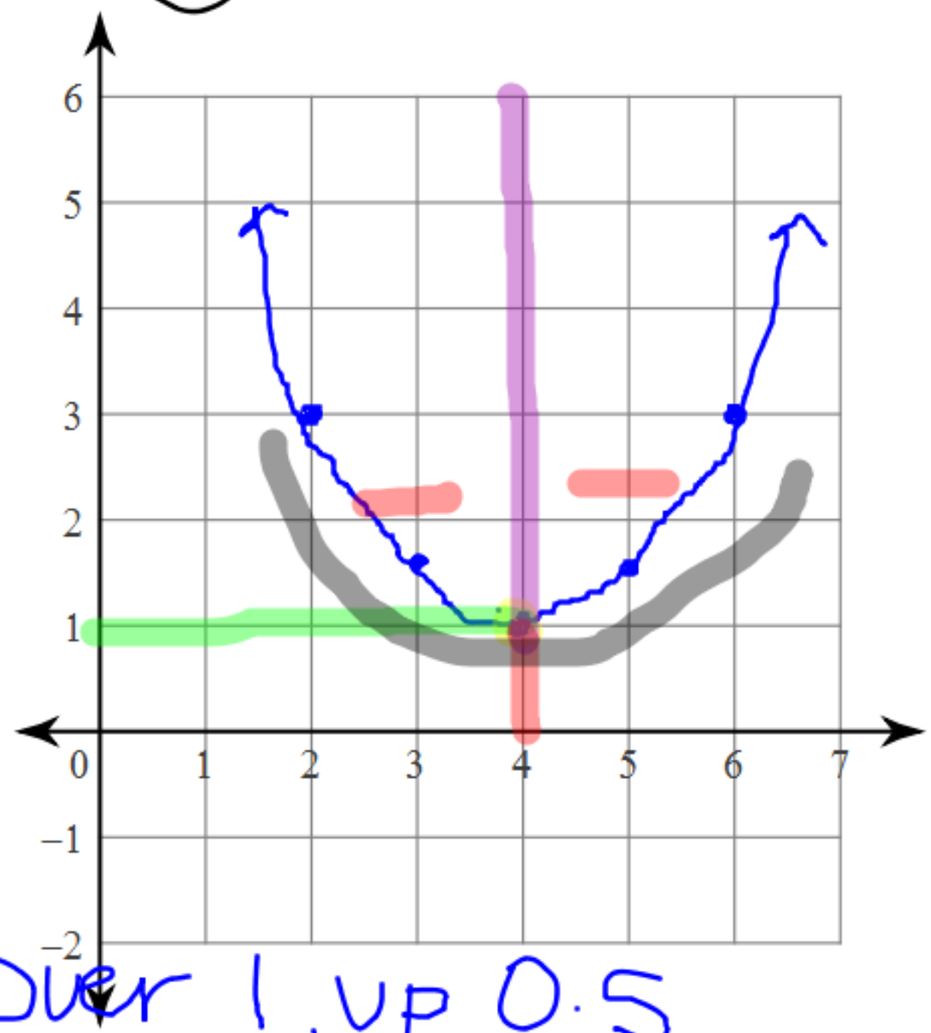
Sketch the graph of each function. State the horizontal and vertical shifts, max/min, stretch/shrink, axis of symmetery, direction of openning, and the vertex

opens up
= min

2) $y = \frac{1}{2}(x-4)^2 + 1$



over 1, up 0.5
over 1, up 1.5
over 1, up 2.5

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

a = vertical stretch or shrink
stretch by 1/2

h = x = AOS

AOS = 4

k = vertical shift ↑ up, ↓ down

V.S. up 1

h = horizontal shift → right +, ← left −

h.s. right 4

vertex (h, k) ← switches signs

(4, 1)

Sketch the graph of each function. State the horizontal and vertical shifts, max/min, stretch/shrink, axis of symmetery, direction of openning, and the vertex

opens up

$y = a(x-h)^2 + k$ ← signs

vertex = (h, k)

3) $y = 2(x+3)^2 + 2$

vertex = $(-3, 2)$

AOS = $x = -3$ ← switches signs

vertical stretch/shrink = a

shrinks by 2

horizontal shift = h

left 3

Vertical shift = k

up 2

over 1, up 2

over 1, up 6

over 1, up 10