

Convert standard to vertex form.

$$a = 2$$

$$h = \frac{-b}{2a} = \frac{-1}{4}$$

$$y = 2\left(x + \frac{1}{4}\right)^2 + \frac{23}{8}$$

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

$$y = 2\left(-\frac{1}{4}\right)^2 + \left(-\frac{1}{4}\right) + 3$$

$$y = 2\left(\frac{1}{16}\right) + \left(-\frac{1}{4}\right) + 3$$

$$y = \frac{1}{8} + \left(-\frac{1}{4}\right) + 3$$

$$y = \frac{1}{8} + \left(-\frac{2}{8}\right) + \frac{24}{8}$$

$$y = \frac{23}{8} = k$$