

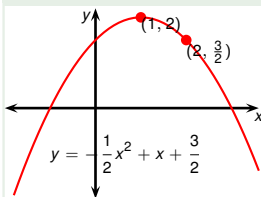
## Precalculus

# Compute parabola with given vertex and passing through a point

Todor Milev

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## Example



Write an equation of a parabola with vertex at  $(1, 2)$  that passes through the point  $(2, \frac{3}{2})$ .

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

$$a(x - 1)^2 + 2 = y$$

$$a(2 - 1)^2 + 2 = \frac{3}{2}$$

$$a = \frac{3}{2} - 2 = -\frac{1}{2}$$

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

$$y = -\frac{1}{2}x^2 + x + \frac{3}{2}$$

Standard form

Vertex at  $(1, 2)$

Passes through  $(2, \frac{3}{2})$

Final answer

Alternative answer