

Review 3 - Quadratics

STEP PATTERN:

Vertex Form

Determine an equation of a quadratic with vertex (3,-7) and step pattern 2,6,10

x^2 | 3 | 5
2, 6, 10

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

$(3, -7)$
 \downarrow \downarrow
 h k

$$y = a(x-3)^2 - 7$$

$$y = 2(x-3)^2 - 7$$

1, 3, 5
5, 15, 25

$(-4, 6)$ and step pattern 5, 15, 25

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

$$y = a(x+4)^2 + 6$$

$$y = 5(x+4)^2 + 6$$

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Standard Form

Suppose the equation of a quadratic is
 $y = -4x^2 + 3x + 2$

a) Determine the step pattern.

-4 \times 1, 3, 5
 $-4, -12, -20$

b) Determine the y-intercept.

y-intercept = 2

c) Determine if (1,3) is on the quadratic.

if you sub in $x=1$ do you get 3?

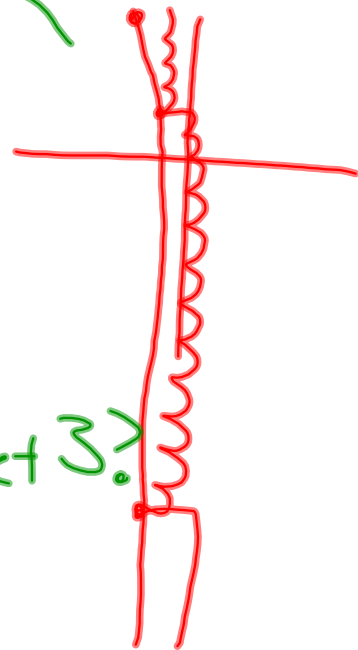
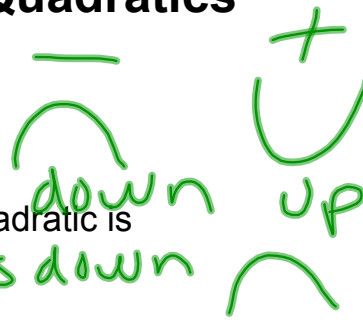
$$y = -4(1)^2 + 3(1) + 2$$

$$= -4(1) + 3 + 2$$

$$= -4 + 3 + 2$$

$$= 1 \text{ since } y \neq 3$$

(1,3) is
not on
the quadratic



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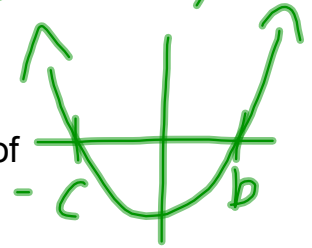
STEP PATTERN:

Factored Form

$$y = a(x - b)(x + c)$$

\downarrow zero
 \downarrow zero

Suppose the zeroes of a quadratic are 1 and -3 and the quadratic goes through (-1, 6). Determine the equation of the quadratic.



$$\rightarrow y = a(x - 1)(x + 3)$$

$$6 = a(-1 - 1)(-1 + 3)$$

$$6 = a(-2)(2)$$

$$\frac{6}{(-4)} = \frac{a(-4)}{(-4)}$$

$$\frac{6}{-4} = a$$

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

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

$$-1.5 = a$$

$$y = -1.5(x - 1)(x + 3)$$