

Practice Quiz #3A – Vertex Form

1. Consider the quadratic equation $y = 2(x+3)^2 - 8$.

a) State the **vertex** of this relationship. [1 mark]

$(-3, -8)$

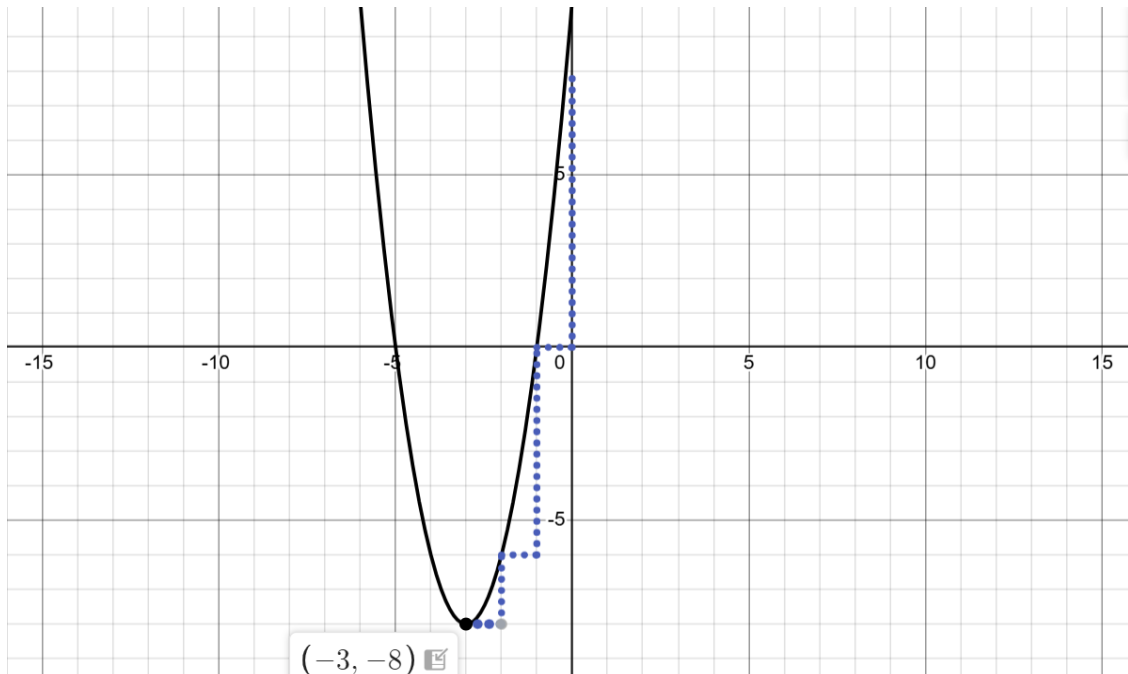
b) By what value is the parabola stretched / compressed? [1 mark]

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c) What is the “**step pattern**” for its graph? [1 mark]

2, 6, 10 (1,3,5 multiplied by 2)

d) Sketch the graph of the parabola on the grid provided below. [3 marks]



2. Write the equation, in vertex form, of a parabola that...

- a) Has a vertex of (2, 5) and a step pattern of $-\frac{1}{4}$, $-\frac{3}{4}$, $-\frac{5}{4}$. [2 marks]

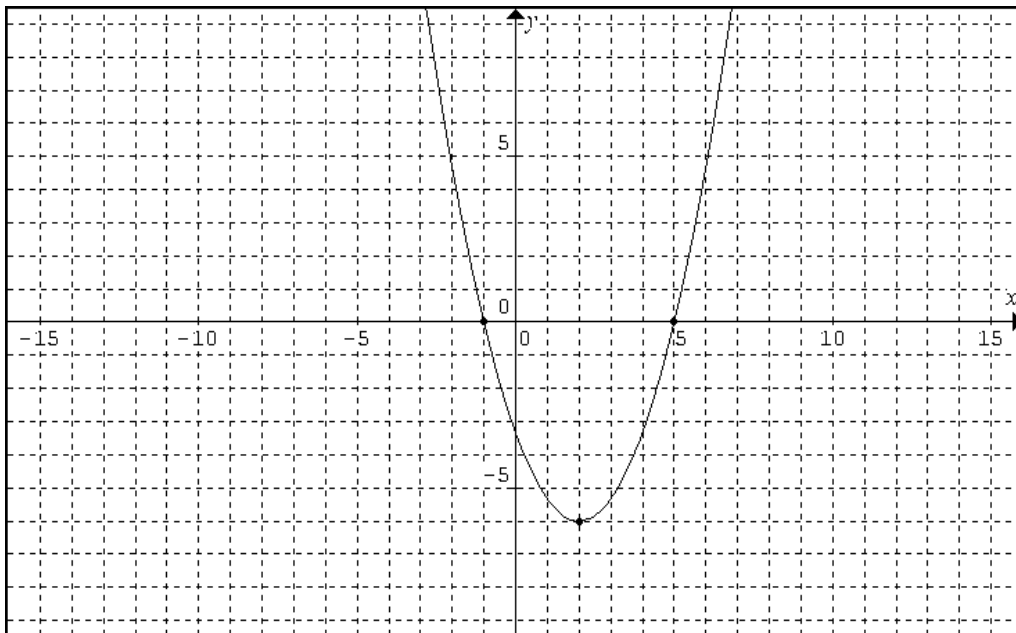
$$y = -\frac{1}{4}(x-2)^2 + 5$$

- b) Has an axis of symmetry at $x = -1$, has one zero, opens downwards, and is wider than $y = x^2$. [2 marks]

Since there is only one zero, the parabola must lie on the x-axis, so the vertex is (-1,0). To be "wider" than x^2 , the stretch value (a) must be less than 1. It must also be negative, since the parabola opens downward.

$$y = -0.5(x+1)^2$$

- c) Is represented by the graph below. [2 marks]



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

$$y = a(x-2)^2 - 6$$

$$0 = a(5-2)^2 - 6$$

$$6 = 9a$$

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

$$y = \frac{2}{3}(x-2)^2 + 6$$