Before taking this test, please make sure you have ***carefully read the directions*** in Canvas.

Complete the following for the quadratic equation $y = 2x^2 + 4x - 16$

1. Show ***all*** work to find the y-intercept, algebraically **(2 pts)**

y -intercept occurs where x=0

$y = 2x^2 + 4x - 16$

$y = 2(0)^2 + 4(0) - 16$

$y = 0 + 0 - 16$

$y = -16$

y-intercept at (0,-16)

2. Show ***all*** work to find the vertex, algebraically **(4 pts)**

Vertex at x = -b/2a = -4/2(2) = -1

$y = 2x^2 + 4x - 16$

$y = 2(-1)^2 + 4(-1) - 16$

$y = 2 - 4 - 16$

$y = -18$

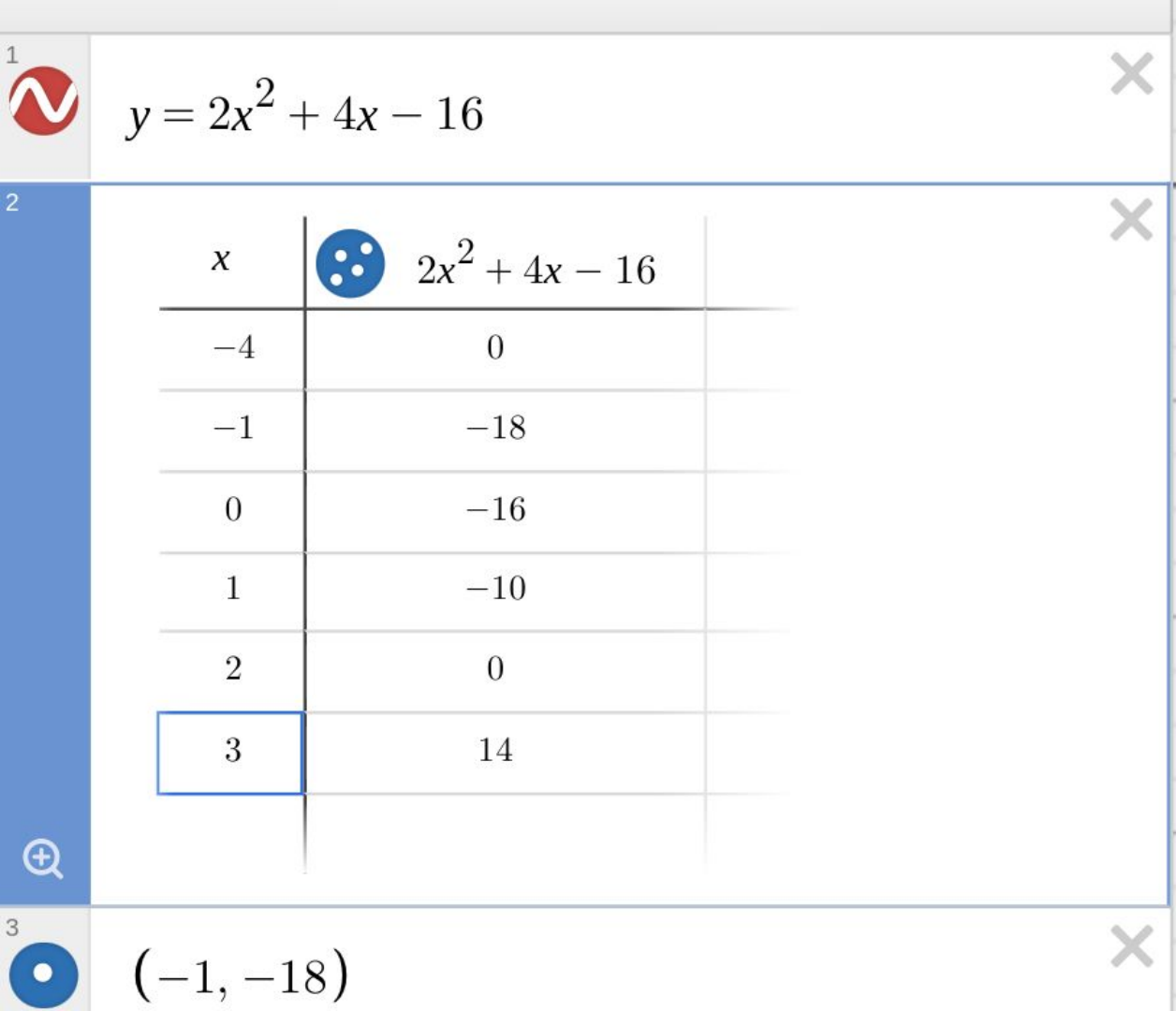
Vertex at (-1,-18)

1

$$y = 2x^2 + 4x - 16$$

2

x	$2x^2 + 4x - 16$
-4	0
-1	-18
0	-16
1	-10
2	0
3	14



3

$$(-1, -18)$$

3. Complete the following for the quadratic equation $y = 2x^2 + 4x - 16$ **(2 pts each)**

x	$y = 2x^2 + 4x - 16$	(x, y)
-2	**EX:** $y = 2(-2)^2 + 4(-2) - 16 = 8+-8 -16 = -16$	(-2, -16)
1	$y = 2(\ 1\ )^2 + 4(\ 1\ ) - 16 = -10$	(1, -10)
2	$y = 2(\ 2\ )^2 + 4(\ 2\ ) - 16 = 0$	(2, 0)
3	$y = 2(\ 3\ )^2 + 4(\ 3\ ) - 16 = 14$	(3, 14)

Complete the following for the quadratic equation $y = 2x^2 + 4x - 16$

Which method will you use to find the solutions of this quadratic equation? ***Circle one.***

Square root Factoring Quadratic Formula

4. Show ***all*** work to find the solution(s) of the equation, using the method you chose. **(8 pts)**

$2x^2 + 4x - 16 = 0$ (Factor by grouping)

$2x^2 - 4x + 8x - 16 = 0$

$2x(x - 2) + 8(x - 2) = 0$

$(2x + 8)(x - 2) = 0$

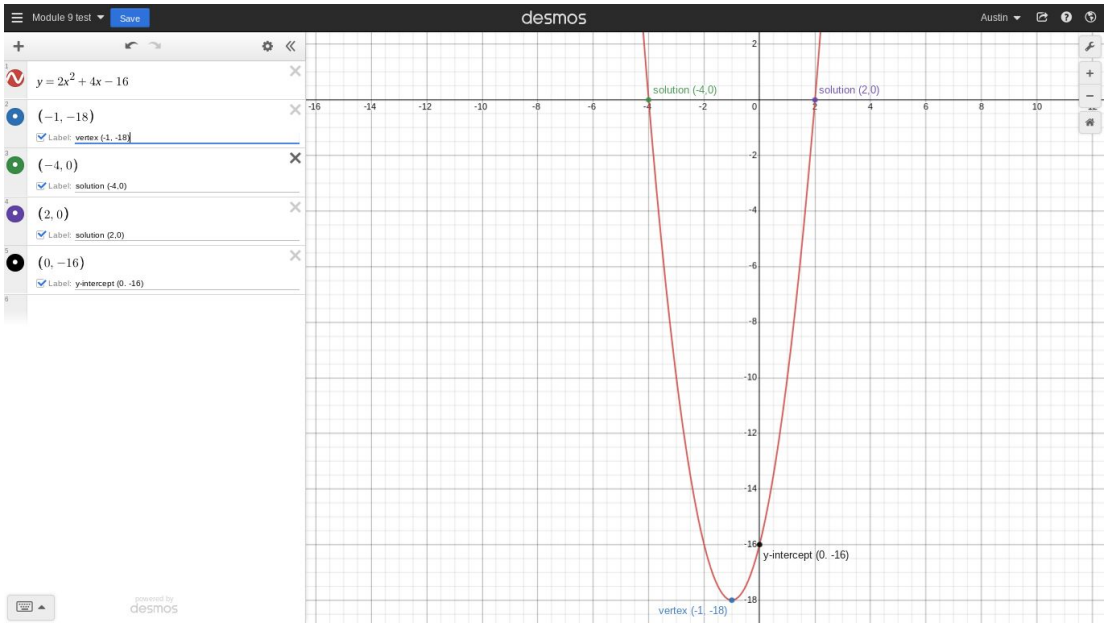
Use zero product property to find 2 solutions:

$2x + 8 = 0$ or $x - 2 = 0$

$x = -4$ or $x = 2$

Complete the following for the quadratic equation $y = 2x^2 + 4x - 16$

5. Graph the quadratic equation in Desmos and upload the screenshot that verifies (by labeling) that you got the correct y-intercept, vertex, and solution(s) algebraically on the previous slides. **(5 pts)**



To label points on a graph, simply type in the ordered pair and click 'label'.

1 $y = 2x^2 + 4x - 16$

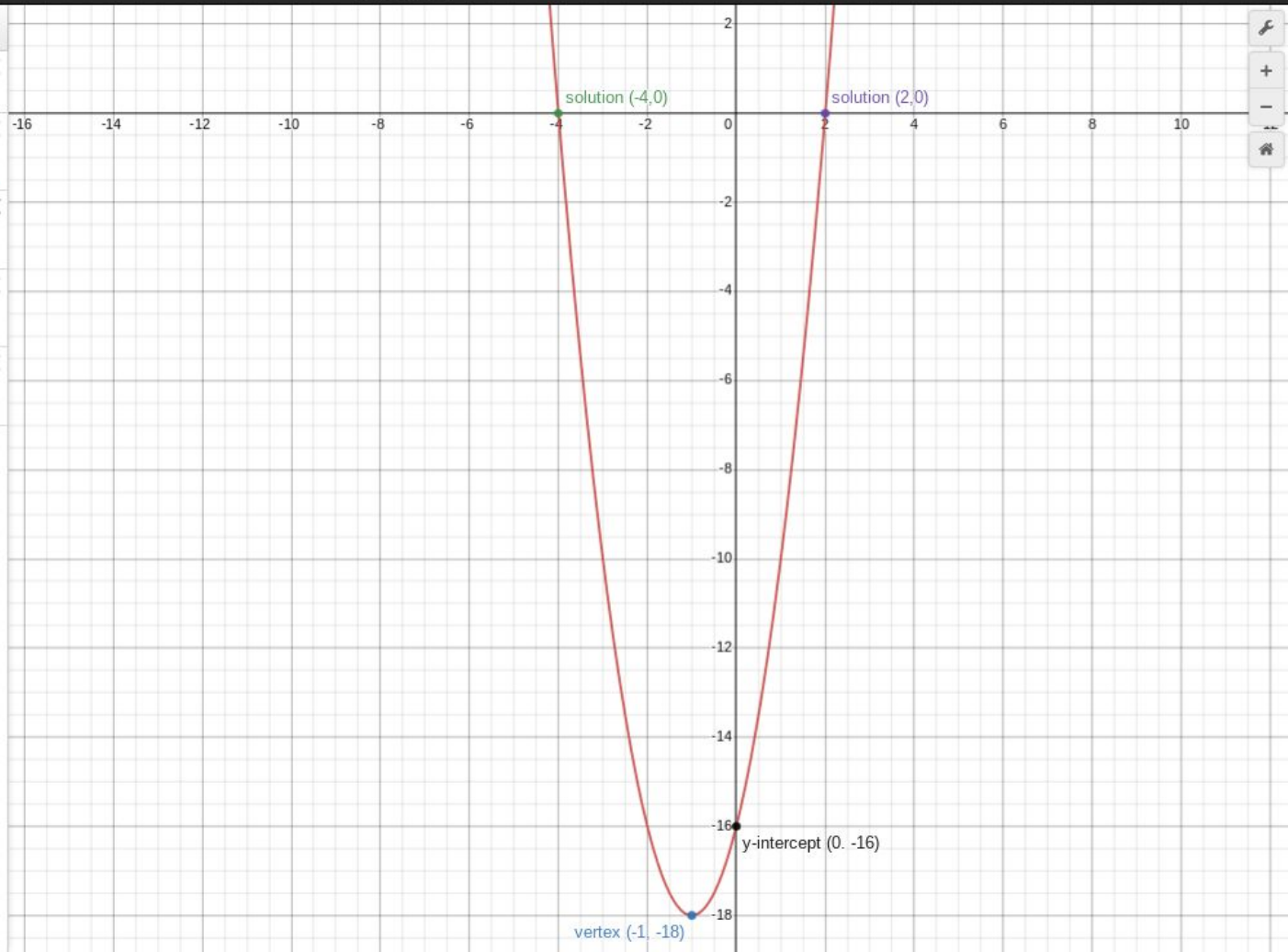
2 $(-1, -18)$
Label: vertex (-1, -18)

3 $(-4, 0)$
Label: solution (-4,0)

4 $(2, 0)$
Label: solution (2,0)

5 $(0, -16)$
Label: y-intercept (0. -16)

6



$y = 2x^2 + 4x - 16$

x	$2x^2 + 4x - 16$
-4	0
-1	-18
0	-16
1	-10
2	0
3	14

$(-1, -18)$

Label: vertex (-1, -18)

$(-4, 0)$

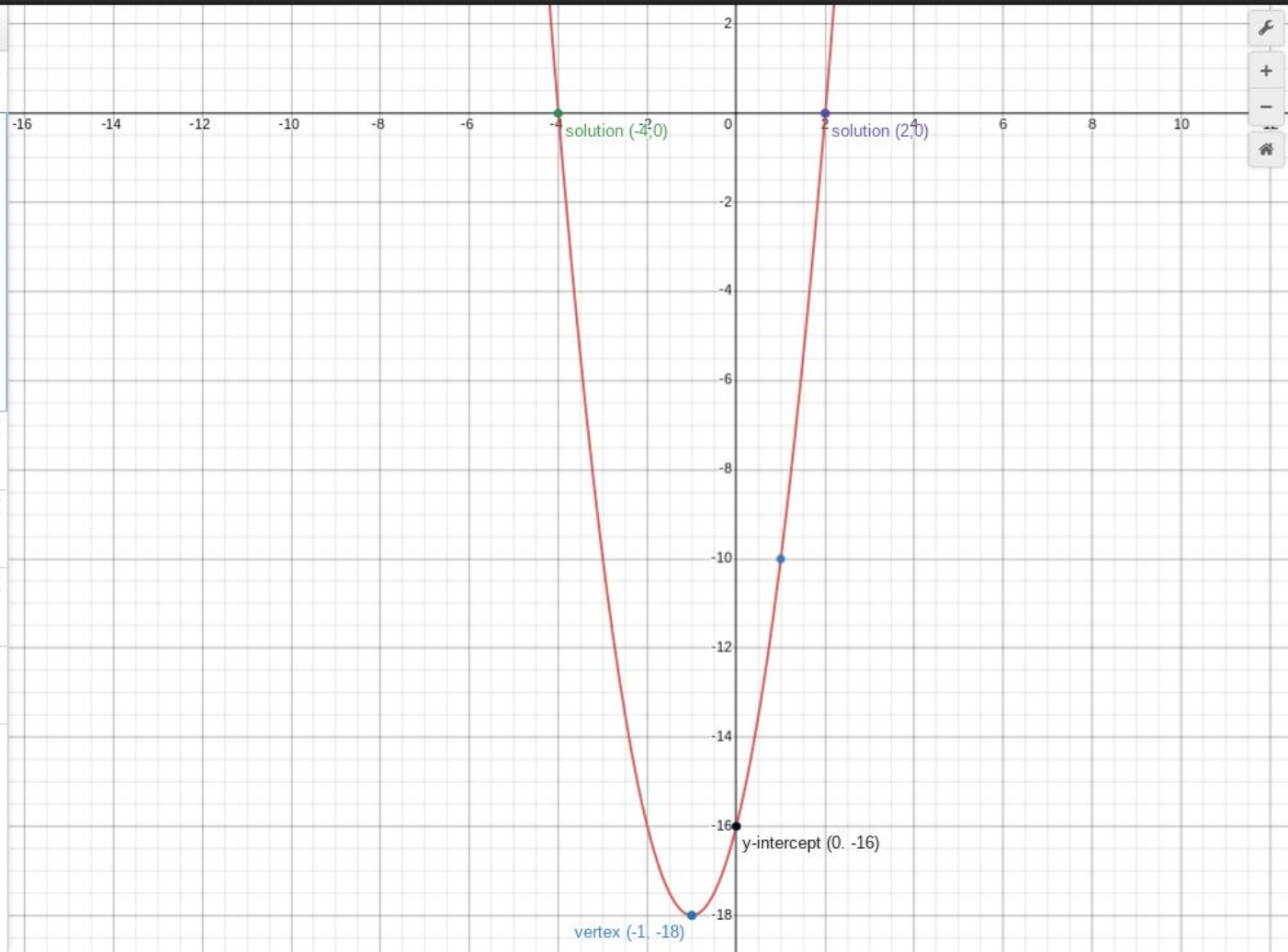
Label: solution (-4,0)

$(2, 0)$

Label: solution (2,0)

$(0, -16)$

Label: y-intercept (0, -16)



HONORS ONLY SLIDE

H1. Write an equation of a quadratic equation, in vertex form, that has a vertex at (2, -3) **(2 pts)**

H2. Find the vertex of the quadratic equation $y = -3(x + 2)^2 + 1$ **(1 pt)**

H3. Show all work to solve the equation by completing the square $x^2 - 12x + 23 = 0$ **(2 pts)**