

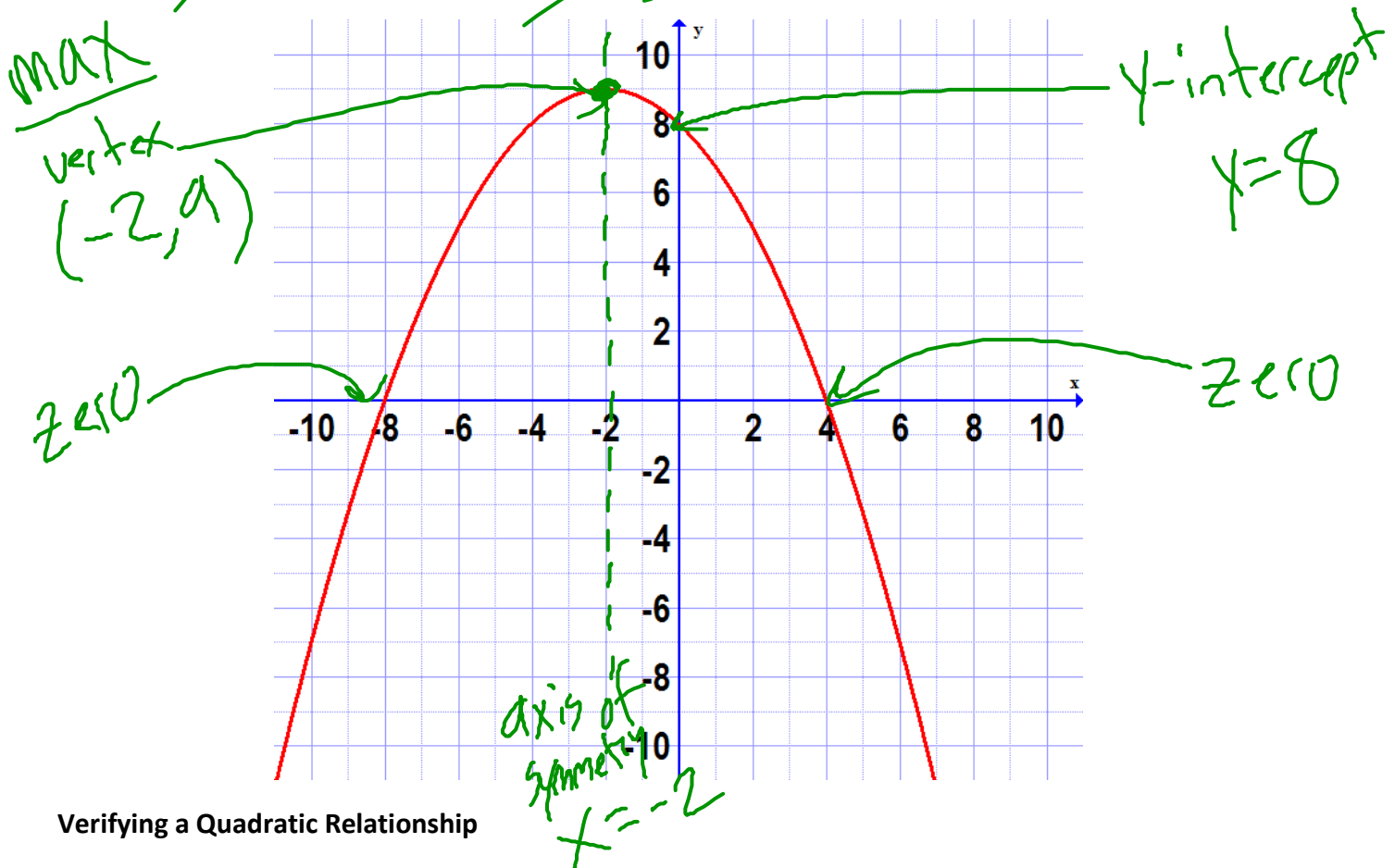
# MFM2P – Course Review

## Units 5 and 6: Quadratic Equations

### Key Features

Identify the key features of this parabola.

(vertex, zeros / x-intercepts, y-intercept, max / min, axis of symmetry)



### Verifying a Quadratic Relationship

We can verify that a table of values gives a quadratic relationship by looking at the first and second differences. If the second differences are constant, we have a quadratic relationship!

x	y	F.D.	S.D.
-3	9	-7	+2
-2	2	-5	+2
-1	-3	-3	+2
0	-6	-1	+2
1	-7	+1	+2
2	-6	+3	+2
3	-3		

The second differences are constant,  $\therefore$  it's quadratic!

## Expanding and Factoring

When we are dealing with quadratic equations, we often need to be able to between standard form equations and factored form equations and vice versa.

Expanding  
(use FOIL or The Grid Method)

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

	x	+3
x	$x^2$	$+3x$
-1	$-x$	$-3$

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

x-intercepts / zeros:  $-3, +1$

y-intercept:  $y = -3$

factored form

Factoring

(find two numbers that multiply to  $c$  and add to  $b$ )

$$y = x^2 - 2x - 8$$

2 and -4

$$y = (x + 2)(x - 4)$$

x-intercepts / zeros:  $-2, +4$

y-intercept:  $-8$

standard form

## Working with Equations

We can actually use our equations to complete tables of values and graph parabolas. All we have to do is plug in various values of  $x$  and solve for  $y$ ! We can use either form of the equation.

\*Don't forget about the information we already know just from looking at the equations!

Complete the tables below and identify the zeros / x-intercepts, vertex and y-intercept of each.

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

x	y
-3	0
-2	-3
-1	-4
0	-3
1	0
2	5
3	12

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

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

$$y = x^2 - 2x - 8$$

x	y
-3	7
-2	0
-1	-5
0	-8
1	-7
2	-8
3	-5

$$y = (x + 2)(x - 4)$$

