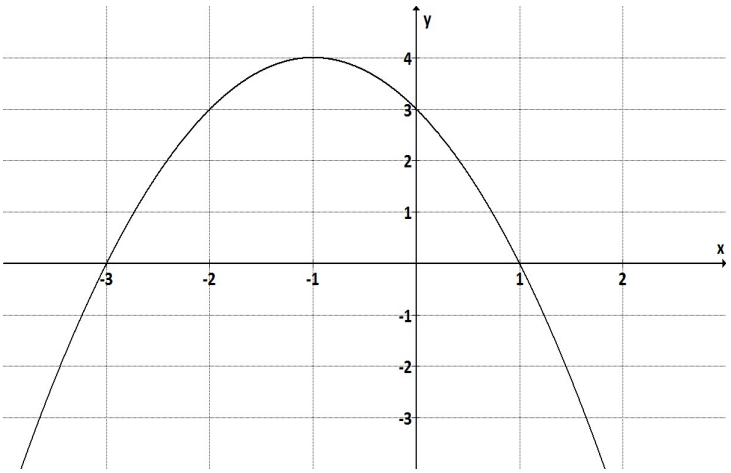
Content	Comm.	Final
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MPM2D Unit 3 PRACTICE TEST Name: _____

November 2022

Part A (19 marks) – Attempt all questions in Part A before moving on to Part B

1. Use the given graph to state the: [7]



a) coordinates of the vertex: _____

b) equation of the axis of symmetry: _____

c) zeros/x-intercepts: _____

d) y-intercept: _____

e) Is there a minimum or maximum value? (Circle answer)

f) What is the min/max value? _____

g) Equation of the parabola in

- Vertex Form: _____
- Factored Form: _____

2. State whether each relation is linear, quadratic or neither. [2]

a) $y = 2x$

_____

b) $y = 5 - x2$

_____

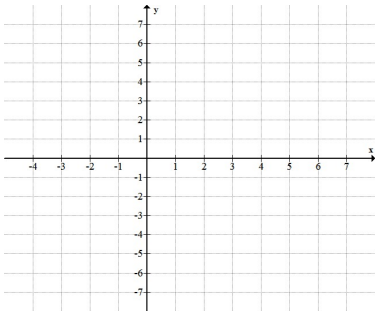
c)

x	y
-1	15
0	8
1	3
2	0
3	-1

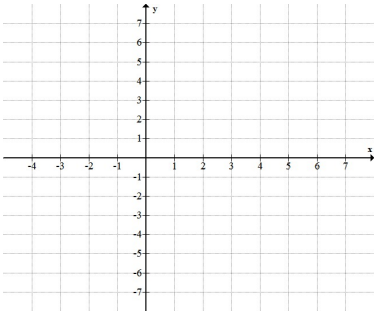
_____

3. Sketch a parabola with the given properties. [4]

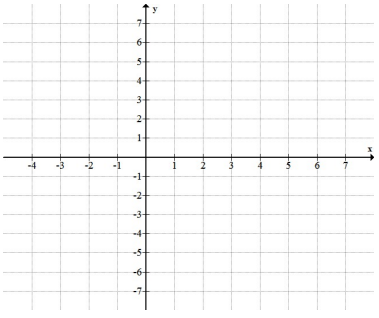
a) opens up with no zeros



b) zeros at -1 and 7 and a minimum at -5



c) $y = (x - 3)^2 - 2$, (show 5 nice points)



4. State all transformations, in order, to the graph of $y = x^2$ required to get the given relation. [6]

a) $y = \frac{1}{2}(x + 4)^2 - 7$ _____

b) $y = -3x^2 + 2$ _____

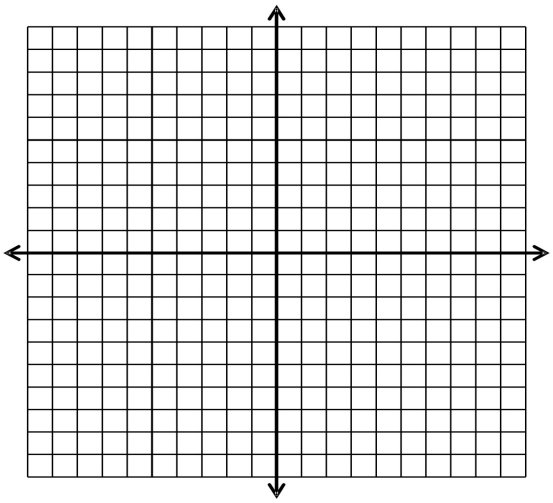
Part B (23 marks) Attempt all question in Part A before trying Part B. Show your work for full marks.

5. Complete the following table of values for the quadratic relation $y = -x^2 - 4x + 3$. [2]

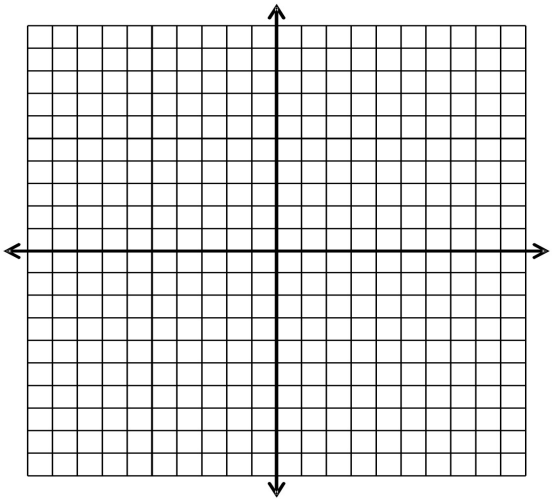
x	y
-2	
4	

6. Sketch the following parabolas on the grids provided. State the vertex and show at least 5 good points. [6]

a) $y = -(x-4)^2$ Vertex: _____

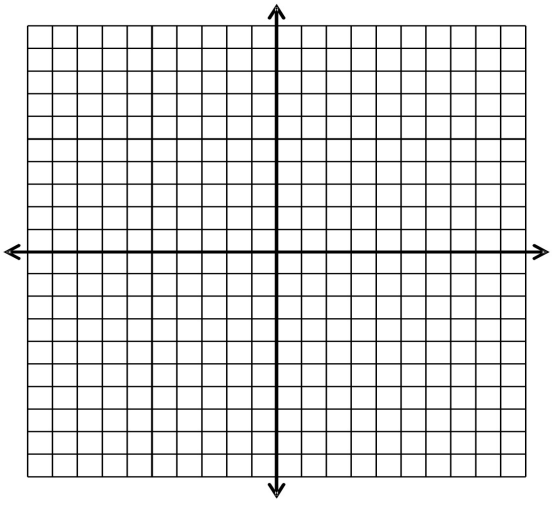


b) $y = 3(x+3)^2 - 4$ Vertex: _____



7. a) Given the quadratic relation $y = 2(x+1)(x-3)$, calculate the vertex. [2]

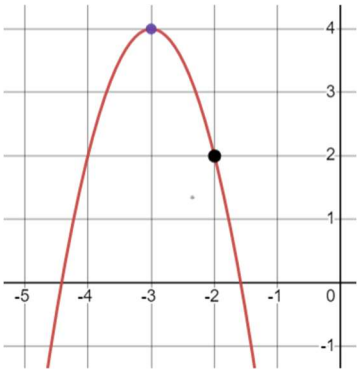
b) Graph the parabola from part a), showing the zeros, the vertex and at least two other exact points. [2]



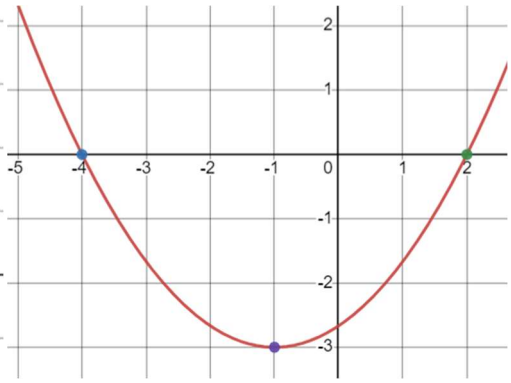
8. Determine algebraically the equation of the parabola with a vertex at (5,2), passing through the point (10,-3). [3]

9. Determine the equation for each quadratic relation, in the form indicated. [4]

GRAPH 1



GRAPH 2



a) GRAPH 1, Equation in Vertex Form

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

_____

b) GRAPH 2, Equation in Factored Form

$$y = a(x - r)(x - s)$$

_____

10. The equation $h = -5(t - 1)^2 + 8$ models the height, $\boldsymbol{h}$, of a diver above the water, in metres, $\boldsymbol{t}$ seconds after the diver leaves the springboard. [4]

a) <u>When</u> does the diver reach the highest point of the dive? _____

b) What is the maximum height the diver reaches? _____

c) How high above the water is the diver at the instant she leaves the springboard? _____

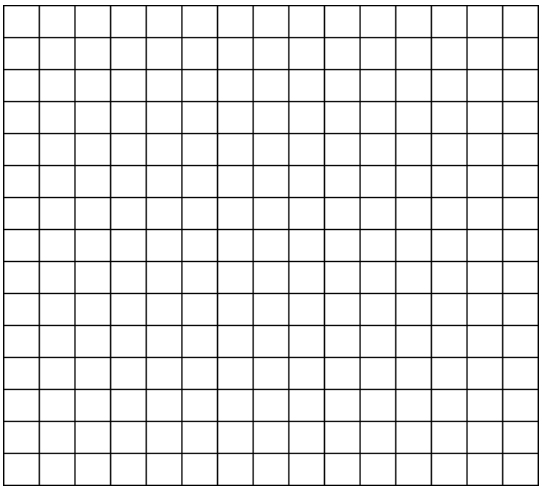
d) At what time is the diver at this same height? _____

Part C (5 marks) Attempt all question in Part B before trying Part C. Show your work for full marks.

11. The height of a ball is tracked in meters above the ground versus horizontal distance travelled, also measured in meters. The ball is thrown into the air from a height of 1 meter, and returns to a height of 1 meter after travelling 6 meters horizontally. The ball reaches a maximum height of 5.5 meters.

a) Sketch the situation on the grid provided. [1]

b) Algebraically determine the equation of the ball's height above the ground with respect to horizontal distance, in **vertex** form. [2]



c) A bird is flying a horizontal distance of 5 meters from where the ball is thrown. If the bird is 4 meters above the ground, will the ball hit the bird? Prove algebraically. [2]