

# Practice: Rates of Change in Quadratic Relations

1. Make a table of values for each relation, then determine whether the relation is quadratic.

- a)  $y = 3x - 1$   
 b)  $y = x^2 + 2x + 1$   
 c)  $y = 49 - x^2$   
 d)  $y = 0.5x^2$

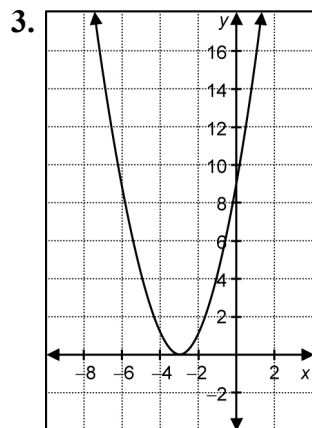
2. Identify whether each relation is linear, quadratic, or neither.

a)

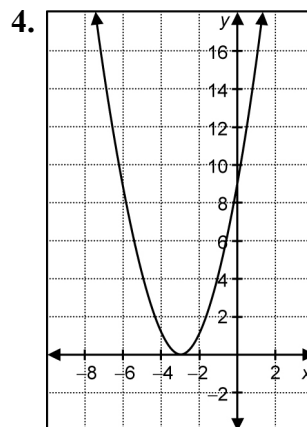
$x$	$y$
-3	12
-2	8
-1	4
0	0
1	-4

b)

$x$	$y$
-3	10
-2	5
-1	2
0	0
1	2



- a) Make a table of values for the graph.  
 b) Using a graphing calculator, determine the equation for the quadratic relation.



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5. Sketch and label a parabola with these features:

- a) the vertex is at (6, 3)  
 b) the equation of the axis of symmetry is  $x = 6$   
 c) the maximum value is 3  
 d) the  $x$ -intercepts are 2 and 10

6. Make a table of values for each quadratic relation, then graph the relation

- a)  $y = x^2 - 7x + 12$     b)  $y = x^2 - 16$   
 c)  $y = x^2 - 5x - 6$     d)  $y = x^2 - 2$   
 e)  $y = -3x^2$

7. The shape of a dome over a stadium can be represented by the equation  $h = -0.4w^2 + 10.6$ , where  $h$  is the height of the dome from the top of the walls and  $w$  is the width from the centre.
- a) Make a table of values from  $w = -4$  to  $w = 4$ .  
 b) Determine the first and second differences.  
 c) Determine the shape of the dome based on your answers from part b)  
 d) Use a graphing calculator to verify your findings.