Properties of Quadratics

1. Which graphs appear to represent a quadratic relation?

a)

c)
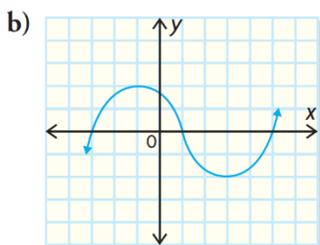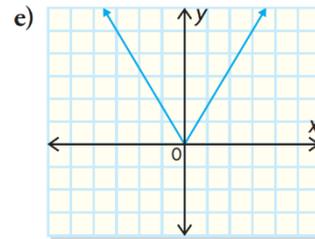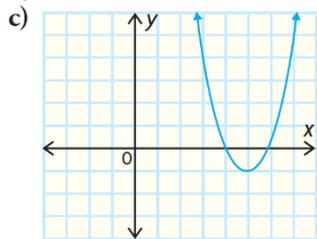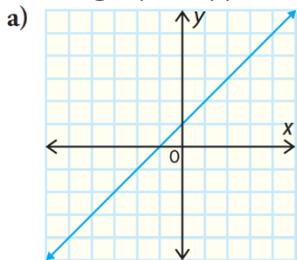
e)

b)

d)

f)
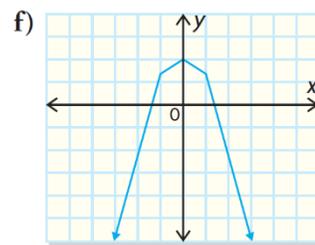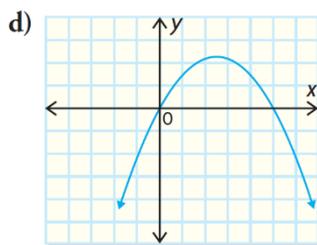
2. Determine the degree of each relation. State which are quadratic.

a) $y = 5x - 2$ b) $y = x^2 - 6x + 4$ c) $y = x(x - 4)$ d) $y = 3(x - 4)^3 + 1$

3. Calculate the finite differences for each set of data and determine whether the relation is linear, quadratic or neither.

a)

x	10	20	30	40
y	21	41	61	81

b)

x	0	1	2	3
y	4	7	12	19

c)

x	2	3	4	5	6
y	4	8	16	32	64

4. Two parabolas have the same x-intercepts, at (0,0) and (10,0). One parabola has a max value of 2, the other parabola has a min value of -4. Sketch the graphs of the parabolas on the same axes.

5. For each graph, state the y-intercept, the zeros, the coordinates of the vertex, the equation of the axis of symmetry and the max/min value.

a)

b)
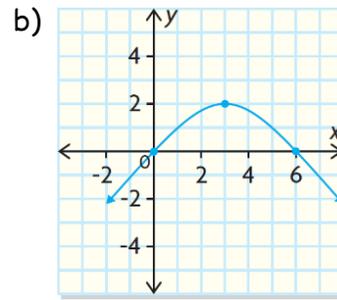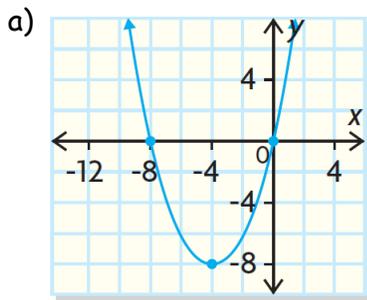
6. The zeros of a quadratic relation occur at $x = 0$ and $x = 6$. The second differences are positive.
   a) Is the y-value of the vertex a maximum value or a minimum value? Explain.
   b) Is the y-value of the vertex a positive number or a negative number? Explain.
   c) Determine the x-value of the vertex.