

Intro to Quadratics Review

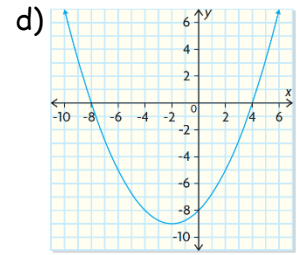
1. State whether each relation is quadratic. Justify your decision.

a) $y = -3x + 5$

b)

x	-3	-2	-1	0	1
y	56	35	18	5	-4

c) $y = 2x(x - 5)$



2. The x -intercepts of a quadratic relation are 2 and 5, and the second differences are negative.

- Is the y -value of the vertex a maximum value or a minimum value? Explain.
- Is the y -value of the vertex positive or negative?
- Calculate the x -coordinate of the vertex.

3. What does a tell you in the equation $y = ax^2 + bx + c$?

4. The Rudy Snow Company makes custom snowboards. The company's profit can be modelled with the relation $y = -6x^2 + 42x - 60$, where x is the number of snowboards sold (in thousands) and y is the profit (in hundreds of thousands of dollars). What is the maximum profit the company can make? How many snowboards need to be sold to make this?

5. The x -intercepts of a parabola are 2 and 7, and the y -intercept is 28.

- Determine an equation for the parabola.
- Determine the coordinates of the vertex.

6. A bus company usually transports 12 000 people per day at a ticket price of \$1. The company wants to raise the ticket price. For every \$0.10 increase in the ticket price, the number of riders per day is expected to decrease by 400. Calculate the ticket price that will maximize revenue.

7. Expand and simplify.

a) $(x+6)(x-3)$

b) $(4x+5)(3x-2)$

c) $-3(2x+5y)(x-y)$

d) $(2x+1)^2$

8. Determine an equation for each parabola. Express your answer in standard form.

a) The x -intercepts are 5 and 9, and the y -coordinate of the vertex is 2.

b) The x -intercepts are 3 and 3, and the parabola passes through the point (2,20).

9. Sketch each graph. Label the intercepts and the vertex using their coordinates.

a) $y = (x-6)(x+2)$

b) $y = -(x-6)(x+4)$