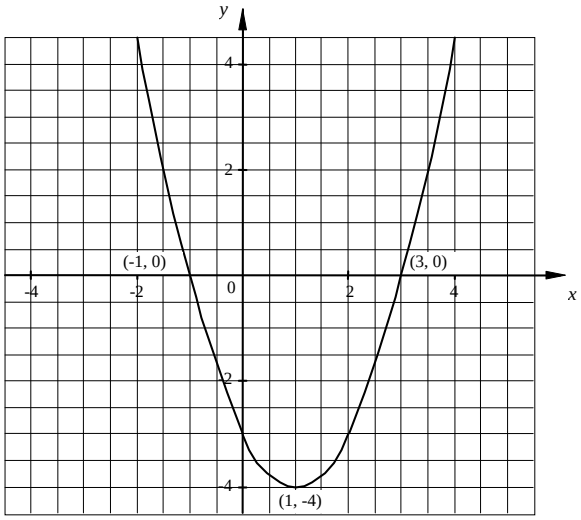
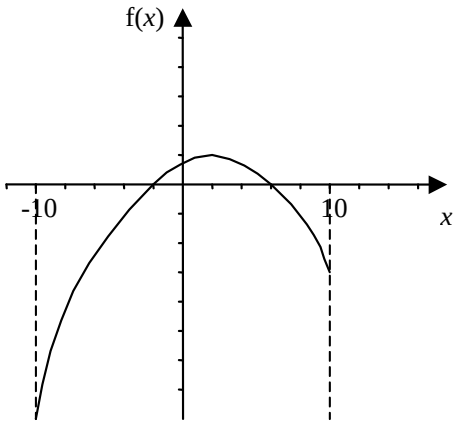
Quadratic Function Practice Questions A Name : _____

1 The parabola represented below crosses the *x*-axis at the points (-1, 0) and (3, 0) and its vertex is the point P(1, -4).



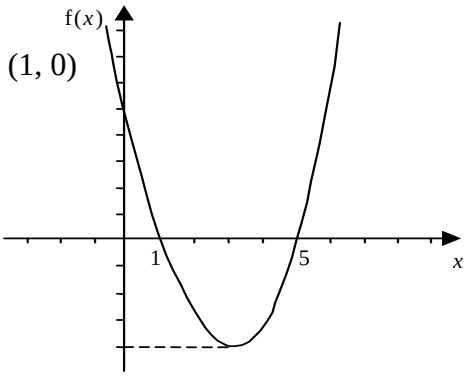
What is the equation, in general form, of the parabola graphed above?

2 The graph at the right illustrates a function defined in the interval [-10, 10].



For what values of x is $f(x) \geq 0$?

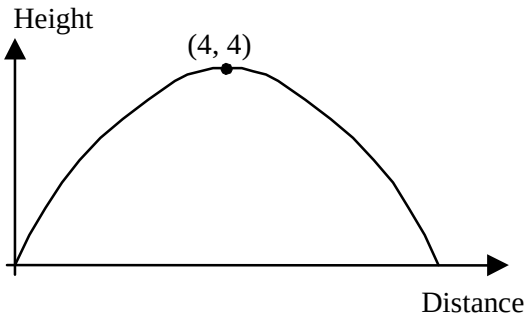
3 The parabola shown in the Cartesian plane intersects the *x*-axis at points (1, 0) and (5, 0) and the *y*-axis at (0, 5).
What is the rule of correspondence, in general form, of this parabola?



4 The parabolic trajectory (path) of a ball thrown from Pat to Chris is illustrated in the Cartesian diagram below.

The distance between Pat, who is standing at the origin, and Chris is 8 m. The maximum height reached by the ball is 4 m.

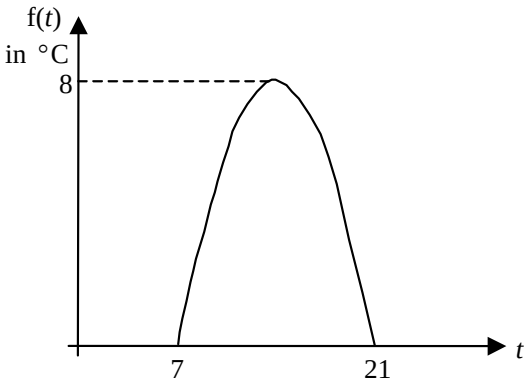
What is the equation of this quadratic function in general form?



5 Temperature changes recorded on a given day in April can be represented by a quadratic function.

The function is graphed on the right.

What is the rule of this function in standard form?



6 What is the rule of the quadratic function that has a range of $-\infty, 4]$ and is positive for $x \in]-1, 3[$?

7 An analysis of the value of a share bought for \$2.00 shows that, during the first 6 months, its value (v) changed according to the following rule:

$$v(t) = -\frac{1}{4}t^2 + 2t + 2$$

where t represents the number of months since the share was purchased.

What was the maximum value of the share during this period?

8 Given the real function defined by $f(x) = x^2 - 2x + 1$. How many zeros does this function have?

9 Students from the school's science club observed that the outdoor temperature recorded at five o'clock between the 1st and the 20th of May was determined by the rule.

$$t(x) = \frac{1}{16}x^2 - x + 3$$

where x is the number of days elapsed since the 1st of May.

What was the minimum outdoor temperature recorded during this period?

10 The altitude of a remote-controlled toy airplane is expressed by the following equation :

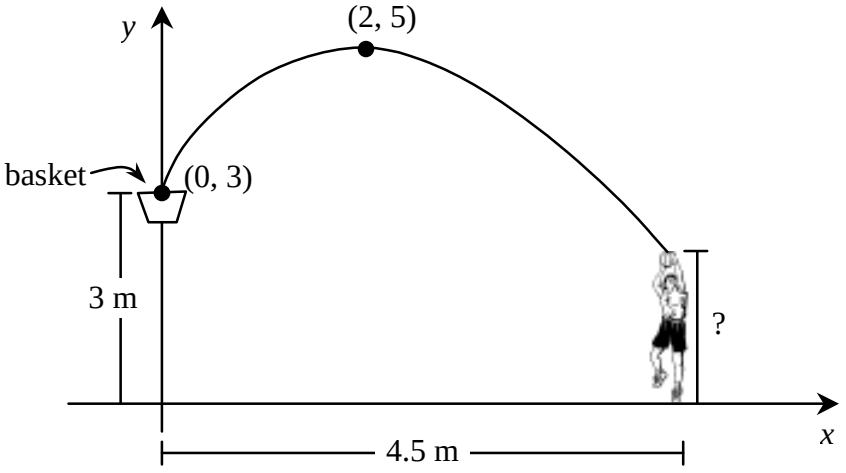
$$f(t) = \frac{-1}{4}t^2 + 3t + 4$$

where t represents the time of the flight expressed in minutes and $f(t)$ is in metres.

Over what interval(s) of time is the altitude decreasing?

11 Thomas threw the winning basket during a basketball tournament. He was situated 4.5 m away from the base of the basket.

The side view of the trajectory of the ball is represented in the Cartesian plane below.



The trajectory is in the form of a parabola whose vertex is at (2, 5).
The height of the basket is 3 m.
To the nearest hundredth metre, what is Thomas's height?

Quadratic Function Practice Questions A

1 $y = x^2 - 2x - 3$

2 [-2, 6]

3 $f(x) = x^2 - 6x + 5$

4 $x^2 - 8x + 4y = 0$

5 $f(t) = \frac{-8}{49}(t - 14)^2 + 8$

6 $k(x) = -x^2 + 2x + 3$

7 $6.00

8 One

9 -1 °C

10 [10, 13]

11 Find the rule of correspondence
Point (0, 3) Vertex (2, 5)

$$y = a(x - h)^2 + k$$
$$y = a(x - 2)^2 + 5$$
$$3 = a(0 - 2)^2 + 5$$
$$3 = 4a + 5$$
$$-2 = 4a$$
$$-0.5 = a$$

Thus, $y = -0.5(x - 2)^2 + 5$

Thomas's height
(4.5, h)

$$h = -0.5(x - 2)^2 + 5$$
$$h = -0.5(4.5 - 2)^2 + 5$$
$$h = -3.125 + 5$$
$$h = 1.875$$

Answer: To the nearest hundredth metre, Thomas's height is **1.88** m.