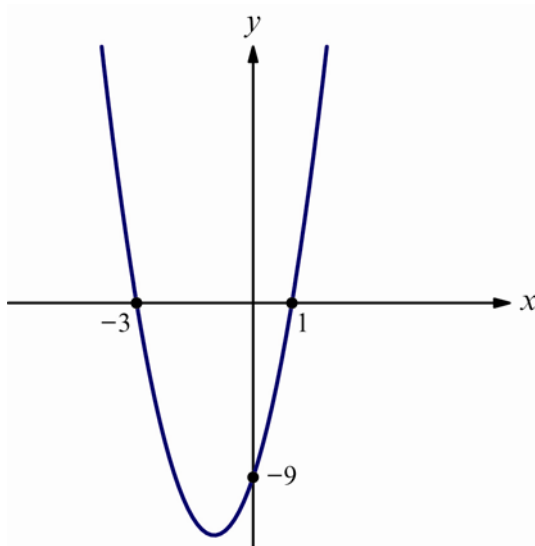


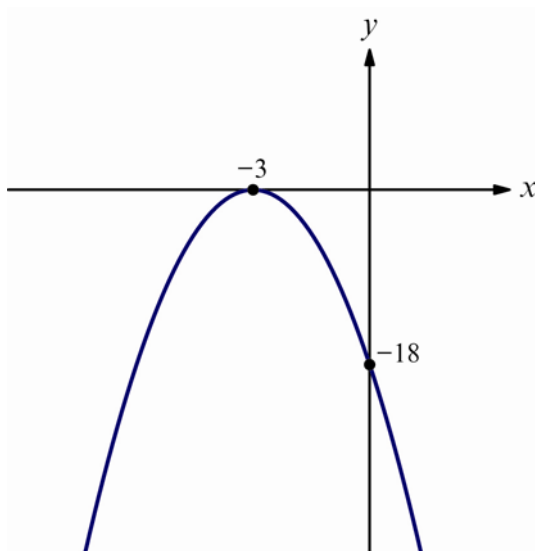
## Self-assessment: 1 Quadratic functions

1. Find the equation of each quadratic graph shown below.

(a)



(b)



[6 marks]



2. (a) Write  $2x^2 - 12x + 25$  in the form  $a(x - h)^2 + k$ .  
 (b) Hence find the minimum value of  $2x^2 - 12x + 25$ .

*(accessible to students on the path to grade 3 or 4) [5 marks]*

3. A ball is thrown from the top of a 60 m tall building. The distance travelled by the ball in the first  $t$  seconds is given by  $d = 2t + 4.9t^2$ . After how many seconds is the ball 12 m above ground?

*(accessible to students on the path to grade 3 or 4) [4 marks]*

**4. Do not use a calculator to answer this question.**

- (a) Find the value of  $k$  for which the curve with equation  $y = kx^2 - 3x + 6$  is tangent to the  $x$ -axis.  
 (b) For this value of  $k$ , find the equation of the axis of symmetry of the curve.

*(accessible to students on the path to grade 5 or 6) [5 marks]*

5. A piece of wire of length 30 cm is cut into two pieces, which are used to form a square of side  $a$  cm and a rectangle with sides 6 cm and  $w$  cm.

- (a) Given that the square and the rectangle have equal areas, show that  $a^2 + 12a - 54 = 0$ .  
 (b) Hence find the exact values of  $a$  and  $w$  for which the square and the rectangle have equal areas.

*(accessible to students on the path to grade 5 or 6) [10 marks]*