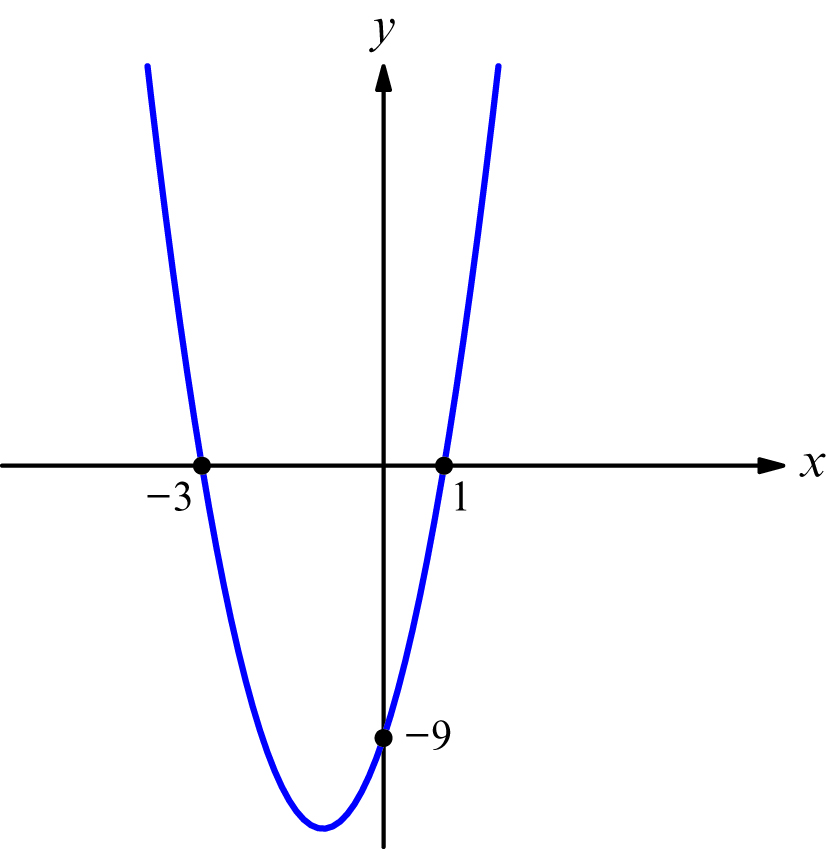
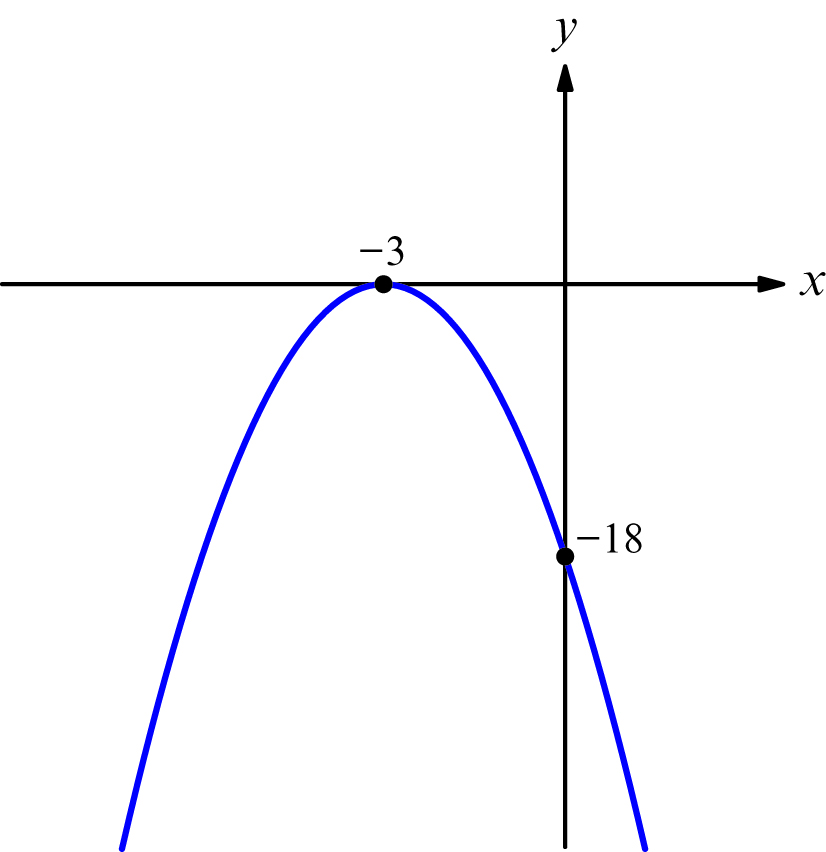
**Self-assessment: 1 Quadratic functions**

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

(a)



(b)



*[6 marks]*

**2.** (a) Write 2*x*2 – 12*x* + 25 in the form *a*(*x* – *h*)2 + *k*.

(b) Hence find the minimum value of 2*x*2 – 12*x* + 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* = 2*t* + 4.9*t*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 – 3*x* + 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 + 12*a* – 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]*