

4. The graph of $y = a(x - p)^2 + q$ has a minimum point (p, q) .
By completing the square, find the minimum point of each of the following quadratic equations:

(ii) $3x^2 - 6x - 1 = 0$

	x	-1
x	x^2	$-x$
-1	$-x$	1

$$y = 3 \left[x^2 - 2x - \frac{1}{3} \right]$$

$$= 3 \left[\underbrace{x^2 - 2x + 1}_{(x-1)^2} \quad \underbrace{-\frac{1}{3} - 1}_{-\frac{4}{3}} \right]$$

$$= 3 \left[(x-1)^2 - \frac{4}{3} \right]$$

$$= 3(x-1)^2 - 4$$

$$\text{min. pt.} = (1, -4)$$

Section 2.7 Surds

2. Express each of the following in its simplest form:

(i) $2\sqrt{2} + 6\sqrt{2} - 3\sqrt{2}$

$$= 8\sqrt{2} - 3\sqrt{2}$$

$$= 5\sqrt{2}$$

(ii) $2\sqrt{2} + \sqrt{18}$

$$= 2\sqrt{2} + \sqrt{9(2)}$$

$$= 2\sqrt{2} + 3\sqrt{2}$$

$$= 5\sqrt{2}$$