Polynomials (answers at the end)

1 Let $p(x) = 3x^2 + 2x - 1$ and $q(x) = x^2 - 2x + 3$. Find $p(x) + q(x)$, $p(x) - q(x)$ and $p(x)q(x)$.

2 The polynomials $f(x)$ and $g(x)$ are $2x^2 + ax - 3$ and $3x^2 - bx - 2$ respectively, where $a$ and $b$ are constants. In the product $f(x)g(x)$, the coefficient of $x^3$ is 6 and the coefficient of $x$ is 1. Find the coefficient of $x^2$.

3 Let $p(x) = x^2 - 6x - 3$ and $q(x) = x^2 - 2x + 4$.

(a) Calculate $p(x) - q(x)$ and $p(x)q(x)$.

The polynomial $p(x) + aq(x)$, where $a$ is a constant, is a perfect square.

(b)* Calculate the two possible values of $a$.

4 In the product of $8x^3 + 3x^2 - 8x - 4$ and $3x - 4$, find the coefficients of

(a) $x$, (b) $x^3$.

5 Calculate the polynomial $(3x^2 + 4x - 3)^2 - (3x^2 - x + 2)^2$.

1 $4x^2 + 2$, $2x^2 - 4x - 4$,
$3x^4 - 4x^3 + 4x^2 + 8x - 3$

2 −25

3 (a) $-4x - 7$, $x^4 - 8x^3 + 13x^2 - 18x - 12$
(b) 3, $-\frac{4}{3}$

4 (a) 20 (b) −23

5 $30x^3 - 15x^2 - 20x + 5$