2 ✸ Factorization and division

Student ID No.									Name	
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1 Factor the following polynomials.

a) $3a^2b + 6ab^2 =$

b) $x^2 + 7x + 12 =$

c) $3x^2 + 10x + 8 =$

d) $2x^2 - 5xy - 12y^2 =$

e) $a^3 - 8b^3 =$

f) $2x^4 - 16x =$

g) $x^2 + \dfrac{5}{2}x + 1 =$

h) $(x - 4)(5x + 1) + 16 =$

2 Using long division, find the quotient and the remainder. (Here, a is a constant.)

a)

$$2x - 3 \overline{\smash{\big)}\, 4x^3 \quad\quad + x + 1}$$

Quotient =

Remainder =

b)

$$x^2 + 2x - 3 \overline{\smash{\big)}\, 2x^3 + x^2 - 13x + 6}$$

Quotient =

Remainder =

c)

$$x^2 + ax - 2a^2 \overline{\smash{\big)}\, x^3 \quad\quad - 3a^2x}$$

Quotient =

Remainder =

3 a) For the function $f(x) = x^3 - 6x^2 + 11x - 6$, calculate the following values.

$$f(1) =$$
$$f(2) =$$
$$f(-1) =$$
$$f(-2) =$$

b) Factor the polynomial $f(x) = x^3 - 6x^2 + 11x - 6$.

4 Let $f(x) = x^3 - 5x^2 + 7x - 3$.

a) Find the value $f(1)$.

b) Factor $f(x)$.

5 Express the following fractions as the sum of a polynomial and a fraction whose numerator has a degree less than its denominator.

a) $\dfrac{6x + 1}{2x - 1} =$

b) $\dfrac{6x^3 + 11x^2 - 31x + 15}{3x - 2} =$