

P4 - Factoring Polynomials

Review problems

1. **Adding and multiplying polynomials.** Simplify the following:

(a) $(2x - 3)^2 - (2x - 3)(2x + 3)$ (b) $(2x - 1)(3x + 4)$ (c) $(x - 2)(x + 2) + (x - 1)^2$

Basic knowledge

2. Factor the following polynomials completely or state that the polynomial is not factorable:

- (a) $x^2 - 4x + 4$
- (b) $-x^2 + 4x - 4$
- (c) $x^2 - 9$
- (d) $x^4 + 9$
- (e) $2a^4 + 2a^3 - 24a^2$
- (f) $x^4 - 81$
- (g) $x^4 - 81x^2$

Intermediate/Advanced Knowledge

3. Factor the following polynomials completely:

- (a) $x^3 - 5x^2 + x - 5$
- (b) $ax^2 - 10a^2x - 24a^3$
- (c) $16x^4 - 32x^3 - 4x^2 + 8x$
- (d) $x^3 - 8$ (hint: check formula for $A^3 - B^3$ in the textbook)
- (e) $x^3 + 27$ (hint: check formula for $A^3 + B^3$ in the textbook)