

## 1.5 - Solving Other Types of Equations

### Review problems

1. **Factoring polynomials.** Factor the following polynomials completely or state that the polynomial is not factorable:

(a)  $2a^4 + 2a^3 - 24a^2$

(b)  $x^4 - 81$

(c)  $x^4 - 81x^2$

2. **Solving linear and quadratic equations.** Solve:

(a)  $2(x + 1) - 11 = 4x - 1$

(b)  $2x(x + 1) - 11 = 4(x - 1)$

### Basic knowledge

3. Solve the following equations:

(a)  $2x^4 + 2x^3 - 24x^2 = 0$

(b)  $x^4 = 81x^2$

4. Solve the following equations:

(a)  $\frac{1}{x} + \frac{2}{x+1} = 1$

(b)  $\frac{1}{x-1} + \frac{x}{x+3} = \frac{4}{x^2 + 2x - 3}$

### Intermediate/Advanced

5. A box has the length twice the size of the width, and height 3 times the size of the width. The volume of this box is  $1\frac{7}{9}$  cubic inches. Find the dimensions of this box.
6. The numerator of a fraction is 3 less than the denominator. The sum of the fraction and its reciprocal is  $\frac{25}{12}$ . Find the numerator and denominator of this fraction assuming that each is a positive integer.