

linear binomials

$$ax + b$$

by Walter Kissach

terminology

terminology

linear polynomial

monomial

$$x$$

$$6x$$

binomial

$$x - 12$$

$$5x + 2$$

$$3 - 4x$$

terminology

terms and coefficients

The linear binomial $ax + b$ is in descending powers of the variable x .

The linear binomial $2x - 7$ has two terms $2x$ and -7 .

2 and -7 are the coefficients of the x and constant terms.

The constant term is also simply -7 .

Take account of the $+$ or the $-$ operator when finding constant terms and coefficients.

terminology

technique

technique

descending powers of x

We often prefer to work with polynomials in descending powers of the variable.

If we receive a polynomial in ascending powers we can reorder it in descending powers of the variable.

$$1 + 5x = 5x + 1$$

$$2 - 3x = -3x + 2$$

We can, of course, leave the polynomial in ascending powers when appropriate.

technique

common factor

One of the first steps in factorizing any polynomial is to factor out a common numerical factor.

Factor out the greatest common numerical factor where it makes sense.

When the first term has a negative coefficient we also factor out negative one .

If there is a variable common to all terms, factor out one with the lowest exponent.

technique

examples

examples

linear binomials

$$6x - 6 = 6(x - 1)$$

$$5x - 15 = 5(x - 3)$$

$$7x - 7 = 7(x - 1)$$

$$6x + 3 = 3(2x + 1)$$

$$15x - 21 = 3(5x - 7)$$

$$10x + 15 = 5(2x + 3)$$

examples

linear binomials

$$15 - 5x = 5(3 - x)$$

$$\begin{aligned} 15 - 5x &= -5x + 15 \\ &= -5(x - 3) \end{aligned}$$

$$1 + 2x = 2x + 1$$

$$\begin{aligned} 1 - x &= -x + 1 \\ &= -(x - 1) \end{aligned}$$

here we optionally reorder in
descending powers of x

examples