

## Operations with Polynomials

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1. Write the polynomial  $-23x^7 + x^9 - 6x^3 + 10 + 2x^2$  in standard form, and then identify the degree and leading coefficient.

**Add the polynomials.**

2.  $(82x^8 + 21x^2 - 6) + (18x + 7x^8 - 42x^2 + 3)$

3.  $(15x - 121x^{12} + x^9 - x^7 + 3x^2) + (x^7 - 68x^2 - x^9)$

7.  $(x^4 - 7x^3 + 2 - x) + (2x^3 - 3) + (1 - 5x^3 - x^4 + x)$

**Subtract the polynomials.**

8.  $(-2x + 23x^5 + 11) - (5 - 9x^3 + x)$

11.  $(9x - 12x^3) - (5x^3 + 7x - 2)$

13.  $(10x^2 - x + 4) - (5x + 7) + (6x - 11)$

Perform the following polynomial multiplications.

5.  $(2x + 5y)(3x^2 - 4xy + 2y^2)$

6.  $(x^3 + x^2 + 1)(x^2 - x - 5)$

7.  $(x^2 + 4x + 7)(x - 5)$

8.  $(3x + y)(y^2 + 4x + 3)$