

## Subtracting Polynomials

**Recall:** When subtracting integers, we rewrote subtraction into addition.

Ex:  $5 - (-3)$

$$\begin{array}{r} 5+3 \\ \hline 8 \end{array}$$

Ex:  $-4 - 8$

$$\begin{array}{r} -4+-8 \\ \hline -12 \end{array}$$

**Subtracting Polynomials:** When you are subtracting polynomials, you need to remember to distribute the negative sign or rewrite subtraction into addition by adding the opposite of each term.

**Step 1:** Distribute the negative sign

**Step 2:** Combine "like" terms

**Step 3:** Write your answer in standard form

**Example 1:** Subtract the polynomials. Write your answer in standard form.

a.)  $(3n^2 + 2n + 4) - (n^2 + n + 9)$

$$3n^2 + 2n + 4 - n^2 - n - 9$$

$$\boxed{2n^2 + n - 5}$$

Quadratic  
trinomial

b.)  $(6k^2 + 3k - 2) - (4k^2 - 2k + 1)$

$$6k^2 + 3k - 2 - 4k^2 + 2k - 1$$

$$\boxed{2k^2 + 5k - 3}$$

Quadratic  
trinomial

c.)  $(5t^3 - 7t + 4) - (6t^2 + 9t + 11)$

$$5t^3 - 7t + 4 - 6t^2 - 9t - 11$$

$$\boxed{5t^3 - 6t^2 - 16t - 7}$$

Cubic  
polynomial

d.)  $(5 - c^2 + 6c) - (-8 + 7c + 9c^2)$

$$5 - c^2 + 6c + 8 - 7c - 9c^2$$

$$\boxed{-10c^2 - c + 13}$$

quadratic  
trinomial

$$e.) (4r^2 + 3r + 1) - (r^2 + 9r + 4)$$

$$4r^2 + 3r + 1 - r^2 - 9r - 4$$

$$\boxed{3r^2 - 6r - 3}$$

Quadratic  
trinomial

$$f.) (6p^2 - 2p - 9) - (6p^2 - 9p - 11)$$

$$6p^2 - 2p - 9 - 6p^2 + 9p + 11$$

$$\boxed{7p + 2}$$

linear  
binomial

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

$$5x^3 + 3x^4 + 5x - 2x^2 - 2x^3 - 3x^4$$

$$\boxed{3x^3 - 2x^2 + 5x}$$

Cubic  
trinomial

$$h.) (12 - 3x^2 + 6x^3) - (-3x - 7x^3 + 3x^2)$$

$$12 - 3x^2 + 6x^3 + 3x + 7x^3 - 3x^2$$

$$\boxed{13x^3 - 6x^2 + 3x + 12}$$

Cubic  
polynomial

Try it!

$$1. (7u^4 + 6u^2 + 5) - (2u^3 + 3u^2 + 9)$$

$$7u^4 + 6u^2 + 5 - 2u^3 - 3u^2 - 9$$

$$\boxed{7u^4 - 2u^3 + 3u^2 - 4}$$

Quartic  
polynomial

$$2. (8 - 4d + 6d^2) - (-7d - 22 + 3d^2)$$

$$8 - 4d + 6d^2 + 7d + 22 - 3d^2$$

$$\boxed{3d^2 + 3d + 30}$$

Quadratic  
trinomial