

## Add, Subtract &amp; Multiply Polynomials

Date \_\_\_\_\_ Period \_\_\_\_\_

Perform the indicated operation. Write your answer in standard form.

1)  $(7r^3 + 5r^2 + 5r) + (4r^3 + 8r - 7r^4)$

2)  $(2a^2 + a - 2a^3) - (-3 - a - 7a^3)$

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

4)  $(x^3 - 3 + 8x) + (-2x + 3x^3 - 8)$

5)  $(-1 + 2a + 5a^2) - (8a^3 + 3a^2 + 3)$

6)  $(-5n^3 - 7 - 2n^4) - (-3n^4 - 7n^3 + 1)$

7)  $(-x^4 - 8x + 2x^2) + (8x^4 - 8x^2 - 7x^3 - 4x)$

8)  $(8 + 3m^3 + 6m) - (-m + 8m^3 - 7 - 3m^2)$

9)  $(-2v + 6 + v^2) + (v - v^2) + (-7v^2 - 8v)$

10)  $(5v^3 + 4v^2) - (-5v^3 + 2v^4 + 7) + (6v - 5v^4)$

11)  $2(5b^2 + 2b - 5)$

12)  $8p(2p^2 + 2p - 2)$

13)  $(5p + 8)(-3p - 5)$

14)  $(k + 7)(6k - 2)$

15)  $(5m - 4)(-2m + 7)$

16)  $(4p + 4)(p + 8)$

17)  $(6k - 2)(2k - 6)$

18)  $(-8x - 1)(2x + 8)$

19)  $(-8n - 7)(2n + 6)$

20)  $(x - 4)(-7x - 1)$

21)  $(8v + 8)(-6v^2 + 8v + 5)$

22)  $(-5n - 7)(6n^2 - 6n + 8)$

**Adding Polynomials** → Combine like terms by adding their coefficients + keeping their exponents the same

Add the following Polynomials:

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

$3x^2 + x + 2$

5.  $(6 + x^2) + (2x - 8)$

$x^2 + 2x - 2$

**Subtracting Polynomials:** → Change to an addition problem by distributing the negative (add the opposite)

Subtract the following Polynomials

6.  $(3a^2 + 10a) - (8a^2 - a)$   
add opposite

$(3a^2 + 10a) + (-8a^2 + a)$   
 $-5a^2 + 11a$

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

$(3x^2 + 2x - 4) + (-2x^2 - x + 1)$   
 $x^2 + x - 3$

**Multiplying Polynomials:**

- Multiply the Coefficients
- Add the Exponents

Multiply the following Polynomials:

**Distributive Property**

8.  $-2x(x^2 - 4x + 2)$

$-2x^3 + 8x^2 - 4x$

**FOIL method**

9.  $(x + 3)(x - 3)$

$x^2 - 3x + 3x - 9$

$x^2 - 9$

- First
- Outside
- Inside
- Last

**Distribute twice + combine like terms**

10.  $(2x + 3)(x^2 - 4x + 6)$

$2x^3 - 8x^2 - 12x$

$+ 3x^2 - 12x - 18$

$2x^3 - 5x^2 - 24x - 18$