

Name _____

Date _____

Advanced Algebra

Algebraic Operations of Polynomials Assignment #1

DISTRIBUTE NEGATIVE SIGNS IN FRONT OF PARENTHESIS, then combine like terms

1) $(6x^2+1) + (5x^2 - 4)$

$$11x^2 - 3$$

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

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

5) $(8x^3 - 1) - (20x^3 + 2x^2 - x - 5)$

$$8x^3 - 1 - 20x^3 - 2x^2 + x + 5$$
$$-12x^3 - 2x^2 + x + 4$$

7) $(4x^2 - 15x + 16) + (2x - 20)$

$$4x^2 - 13x - 4$$

9) $(-3x^3 + 4x - 9) - (2x^3 + x^2 - x)$

$$-3x^3 + 4x - 9 - 2x^3 - x^2 + x$$
$$-5x^3 - x^2 + 5x - 9$$

11) $(15 - 10x^3 - 2x^2 + x) - (x^2 + 7x)$

$$15 - 10x^3 - 2x^2 + x - x^2 - 7x$$
$$-10x^3 - 3x^2 - 6x + 15$$

13) $(4x - 33 + 9x^2) + (20x^3 - 19x + 3)$

$$20x^3 + 9x^2 - 15x - 30$$

2) $(2x^3+11x+2) - (x^3-2x+7)$

$$2x^3 + 11x + 2 - x^3 + 2x - 7$$
$$x^3 + 13x - 5$$

4) $(14 - 16x) + (10x - 5)$

$$14 - 16x + 10x - 5$$
$$-6x + 9$$

6) $6x - (22x + 3 - 36x^2 + x^3)$

$$6x - 22x - 3 + 36x^2 - x^3$$
$$-x^3 + 36x^2 - 16x - 3$$

8) $(7x^3 - 2 + x^2 + 13x) - (4x^3 + 10)$

$$7x^3 - 2 + x^2 + 13x - 4x^3 - 10$$
$$3x^3 + x^2 + 13x - 10$$

10) $(6x^2 - 18x + 3) - (14x^2 - 12x + 9)$

$$6x^2 - 18x + 3 - 14x^2 + 12x - 9$$
$$-8x^2 - 6x - 6$$

12) $(50x - 3) - (8x^3 + 9x^2 + 2x + 4)$

$$50x - 3 - 8x^3 - 9x^2 - 2x - 4$$
$$-8x^3 - 9x^2 + 48x - 7$$

14) $(12x^3 - 5x^2 - 70x + 1) + (-17x^3 + 56x)$

$$12x^3 - 5x^2 - 70x + 1 - 17x^3 + 56x$$
$$-5x^3 - 5x^2 - 14x + 1$$

Multiply the following: (YOU can set up a box or just distribute on the easier ones)

15) $x(x^2 + 9x - 5)$

$$\boxed{x^3 + 9x^2 - 5x}$$

16) $12x^2(x-8)$

$$\boxed{12x^3 - 96x^2}$$

17) $-2x(x+4)$

$$\boxed{-2x^2 - 8x}$$

18) $2x(3x^2 - x + 6)$

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

19) $(x-2)(x-4)$

$$\boxed{x^2 - 6x + 8}$$

20) $(x+8)(x-1)$

$$\boxed{x^2 + 7x - 8}$$

21) $(x+3)(x^2 - x + 2)$

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

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

22) $(x+9)(x^2 - 6x + 4)$

$$x^3 - 6x^2 + 4x + 9x^2 - 54x + 36$$

$$\boxed{x^3 + 3x^2 - 50x + 36}$$

23) $(2x-1)(3x^3 - x + 3)$

$$6x^4 - 2x^2 + 6x - 3x^3 + x - 3$$

$$\boxed{6x^4 - 3x^3 - 2x^2 + 7x - 3}$$

24) $(6x+2)(2x^2+x+1)$

$$12x^3 + 6x^2 + 6x + 4x^2 + 2x + 2$$

$$\boxed{12x^3 + 10x^2 + 8x + 2}$$

25) $(x+9)(x^2 - 2x + 6)$

$$x^3 - 2x^2 + 6x + 9x^2 - 18x + 54$$

$$\boxed{x^3 + 7x^2 - 12x + 54}$$

26) $(2x-3)(4x^2-3x+3)$

$$8x^3 - 6x^2 + 6x - 12x^2 + 9x - 9$$

$$\boxed{8x^3 - 18x^2 + 15x - 9}$$

Write in Standard (general) Form:

27) $(x-9)(x+9)$

$$x^2 - 81$$

28) $(x+2)(x-2)$

$$x^2 - 4$$

29) $(x+5)^3$

$$x^3 + 3x^2(5) + 3x(25) + 125$$

$$x^3 + 15x^2 + 75x + 125$$

30) $(x-3)^2$

$$x^2 - 6x + 9$$

31) $(x-4)^3$

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

$$x^3 - 12x^2 + 48x - 64$$

32) $(x+6)^3$

$$x^3 + 3x^2(6) + 3x(6^2) + 6^3$$

$$x^3 + 18x^2 + 108x + 216$$

33) $(x+1)^3$

$$x^3 + 3x^2 + 3x + 1$$

34) $(3x+4)^2$

$$9x^2 + 24x + 16$$

35) $(2x-1)^2$

$$4x^2 - 4x + 1$$

36) $(3x+2y)^3$

	$9x^2$	$12xy$	$4y^2$
$3x$	$27x^3$	$108x^2y$	$12xy^2$
$2y$	$18x^2y$	$24xy^2$	$8y^3$

$$27x^3 + 126x^2y + 36xy^2 + 8y^3$$