

## Advanced Algebra - Polynomials

Date \_\_\_\_\_ In class

Name \_\_\_\_\_

Simplify.

1.  $(5x^2 + 2x - 7) + (x^2 - 8x + 12)$

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

3.  $(b^{2n} - b^n - 3) + (2b^{2n} - 3b^n + 4)$

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

5.  $(9x^2y^3)(-3x^4y)$

6.  $(2a^2b)(5ab^2c^5)(3a^3c^2)$

7.  $(2x^2y^6z)^3$

8.  $(\frac{1}{4}m^4n^2)^3$

9.  $y^{3n} \cdot y^{3n-2}$

10.  $(a^n)^{2n}$

11.  $(x + 4)(x - 9)$

12.  $(2y + 3)(4y - 5)$

13.  $(x - 8)(x + 8)$

14.  $(m + n)(m - n)$

15.  $(4y - 9)(4y + 9)$

16.  $(x + 2)(x^2 + 3x - 2)$

17.  $(3a^2b^5)(-5a^3b) + (6a)(4a^4b^6)$

18.  $(3x^2)^2(2x)^3 + (-5x^5)(2x^2)$

Advanced Algebra - Polynomials *In class*

Date \_\_\_\_\_

Name Key

Simplify.

1.  $(5x^2 + 2x - 7) + (x^2 - 8x + 12)$

$6x^2 - 6x + 5$

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

$-x^2 + 1$

3.  $(b^{2n} - b^n - 3) + (2b^{2n} - 3b^n + 4)$

$3b^{2n} - 4b^n + 1$

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

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

5.  $(9x^2y^3)(-3x^4y)$

$-27x^6y^4$

6.  $(2a^2b)(5ab^2c^5)(3a^3c^2)$

$30a^6b^3c^7$

7.  $(2x^2y^6z)^3$

$8x^6y^{18}z^3$

8.  $(\frac{1}{64}m^4n^2)^3$

$\frac{1}{64}m^{12}n^6$

9.  $y^{3n} \cdot y^{3n-2}$

$y^{6n-2}$

10.  $(a^n)^{2n}$

$a^{2n^2}$

11.  $(x+4)(x-9)$

$x^2 - 5x - 36$

12.  $(2y+3)(4y-5)$

$8y^2 + 2y - 15$

13.  $(x-8)(x+8)$

$x^2 - 64$

14.  $(m+n)(m-n)$

$m^2 - n^2$

15.  $(4y-9)(4y+9)$

$16y^2 - 81$

16.  $(x+2)(x^2+3x-2)$

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

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

17.  $(3a^2b^5)(-5a^3b) + (6a)(4a^4b^6)$

$-15a^5b^6 + 24a^5b^6$

$9a^5b^6$

18.  $(3x^2)^2(2x)^3 + (-5x^5)(2x^2)$

$9x^4 \cdot 8x^3 + -10x^7$

$72x^7 - 10x^7$

$62x^7$

Advanced Algebra - Polynomials  
Assignment # 2

Name \_\_\_\_\_

Simplify.

1.  $(ab^3)(a^3b)$

2.  $(-2ab^4)(-3a^2b^4)$

3.  $(9xy^2)(-2x^4y^2)$

4.  $(x^2y)^2$

4.  $(x^2y^4)^4$

6.  $(-2ab^2)^3$

7.  $(-3x^2y^3)^3$

8.  $(2a^5b^2)^2(-a^3b)$

9.  $(-3c^4d^2)^2$

10.  $(xy)(x^2y^3)^2$

11.  $(x^4y^2)(xy^3)^2$

12.  $(2a^4b)^3(-3ab^4)^2$

13.  $(-3st^3)^3(-2^2s^2t)^2$

14.  $(4ab)^2(-2ab^2c^3)^3$

15.  $y^n(y^{4n})$

16.  $x^{3n} \cdot x^{n+1}$

17.  $(a^n)^{2n}$

18.  $(a^{n-4})^{2n}$

19.  $(y^{4n-1})^3$

20.  $(2xy)(-3x^2yz)(x^2y^3z^4)$

21.  $(5a^2b^4c)(-2a^4bc^5)$

22.  $(4x^4)(2x^2) + (5x)(-3x^5)$

23.  $(-3a^4b^2c)(4a^2b^3) - (2a^3bc)(-a^3b^4)$

24.  $(x - 2)(x + 7)$

25.  $(y + 8)(y + 7)$

26.  $(t - 4)(t + 4)$

27.  $(2x - 3)(3x - 4)$

28.  $(5a - 2)(2a + 1)$

29.  $(x + y)(x + 3y)$

30.  $(a - y)(a + y)$

31.  $(x^2 - 4)(x^2 - 5)$

32.  $(x^n + 2)(x^n + 3)$

33.  $(2a^n - 3)(3a^n + 2)$

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

35.  $(x + 3)(x^2 + 5x - 2)$

36.  $(x + 5)(x^3 - 3x + 4)$

37.  $(3a + 2)(a^3 - 2a^2 + 5)$

38.  $(2a - 3)(3a^2 - 2a - 4)$

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

Advanced Algebra - Polynomials  
Assignment # 2

Name Key

Simplify.

1.  $(ab^3)(a^3b)$   
 $a^4b^4$

2.  $(-2ab^4)(-3a^2b^4)$   
 $6a^3b^8$

3.  $(9xy^2)(-2x^4y^2)$   
 $-18x^5y^4$

4.  $(x^2y)^2$   
 $x^4y^2$

4.  $(x^2y^4)^4$   
 $x^8y^{16}$

6.  $(-2ab^2)^3$   
 $-8a^3b^6$

7.  $(-3x^2y^3)^3$   
 $-27x^6y^9$

8.  $(2a^5b^2)^2(-a^3b)$   
 $4a^{10}b^4 \cdot -a^3b$   
 ~~$-4a^{13}b^5$~~

9.  $(-3c^4d^2)^2$   
 $9c^8d^4$

10.  $(xy)(x^2y^3)^2$   
 $xy \cdot x^4y^6$   
 $x^5y^7$

11.  $(x^4y^2)(xy^3)^2$   
 $x^4y^2 \cdot x^2y^6$   
 $x^6y^8$

12.  $(2a^4b)^3(-3ab^4)^2$   
 $8a^{12}b^3 \cdot 9a^2b^8$   
 $72a^{14}b^{11}$

13.  $(-3st^3)^3(-2^2s^2t)^2$   
 $-27s^3t^9 \cdot (-4s^2t)^2$   
 $-27s^3t^9 \cdot 16s^4t^2$   
 $-432s^7t^{11}$

14.  $(4ab)^2(-2ab^2c^3)^3$   
 $16a^2b^2 \cdot -8a^3b^6c^9$   
 $-128a^5b^8c^9$

15.  $y^n(y^{4n})$   
 $y^{5n}$

16.  $x^{3n} \cdot x^{n+1}$   
 $x^{4n+1}$

17.  $(a^n)^{2n}$   
 $a^{2n^2}$

18.  $(a^{n-4})^{2n}$   
 $a^{2n^2-8n}$

19.  $(y^{4n-1})^3$   
 $y^{12n-3}$

20.  $(2xy)(-3x^2yz)(x^2y^3z^4)$   
 $-6x^5y^5z^5$

21.  $(5a^2b^4c)(-2a^4bc^5)$   
 $-10a^6b^5c^6$

22.  $(4x^4)(2x^2) + (5x)(-3x^5)$   
 $8x^6 + -15x^6$   
 $-7x^6$

23.  $(-3a^4b^2c)(4a^2b^3) - (2a^3bc)(-a^3b^4)$   
 $-12a^6b^5c + 2a^6b^5c$   
 $-10a^6b^5c$

$$24. (x-2)(x+7)$$

$$x^2 + 5x - 10$$

$$25. (y+8)(y+7)$$

$$y^2 + 15y + 56$$

$$26. (t-4)(t+4)$$

$$t^2 - 16$$

$$27. (2x-3)(3x-4)$$

$$6x^2 - 17x + 12$$

$$28. (5a-2)(2a+1)$$

$$10a^2 + a - 2$$

$$29. (x+y)(x+3y)$$

$$x^2 + 4xy + 3y^2$$

$$30. (a-y)(a+y)$$

$$a^2 - y^2$$

$$31. (x^2-4)(x^2-5)$$

$$x^4 - 9x^2 + 20$$

$$32. (x^n+2)(x^n+3)$$

$$x^{2n} + 5x^n + 6$$

$$33. (2a^n-3)(3a^n+2)$$

$$6a^{2n} - 5a^n - 6$$

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

$$x^3 - 3x^2 + 4x - 2x^2 + 6x - 8$$

$$x^3 - 5x^2 + 10x - 8$$

$$35. (x+3)(x^2+5x-2)$$

$$x^3 + 5x^2 - 2x + 3x^2 + 15x - 6$$

$$x^3 + 8x^2 + 13x - 6$$

$$36. (x+5)(x^3-3x+4)$$

$$x^4 - 3x^2 + 4x + 5x^3 - 15x + 20$$

$$x^4 + 5x^3 - 3x^2 - 11x + 20$$

$$38. (2a-3)(3a^2-2a-4)$$

$$6a^3 - 4a^2 - 8a - 9a^2 + 6a + 12$$

$$6a^3 - 13a^2 - 2a + 12$$

$$37. (3a+2)(a^3-2a^2+5)$$

$$3a^4 - 6a^3 + 15a + 2a^3 - 4a^2 + 10$$

$$3a^4 - 4a^3 - 4a^2 + 15a + 10$$

$$39. (x-2)(x+2)(x^2+4)$$

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

$$x^4 - 16$$