

Name KEY

Algebra I Review Day 6 Polynomials and Factoring

In the following polynomial, what is the leading term? What is the leading coefficient? How many terms are in the polynomial? What is the degree of the polynomial?

$$4x^7 - 3x^5 + 2x^3 - 1$$

Leading Term $(4x^7)$ Leading Coeff (4) # of Terms (4)

Add the following polynomials.

Degree of Polynomial = (7)

1. $2x + 1$ and $5x - 3$

$$2x + 1 + 5x - 3$$

$$\boxed{7x - 2}$$

2. $x^2 + 3x + 2$, $x + 4$ and $3x - 5$

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

$$\boxed{x^2 + 7x + 1}$$

Subtract the following polynomials

3. $2x - 5$ from $3x + 1$

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

$$3x + 1 - 2x + 5$$

$$\boxed{x + 6}$$

4. $(13x^2 - x - 12) - (-5x + x^2 - 7)$

$$13x^2 - x - 12 + 5x - x^2 + 7$$

$$\boxed{12x^2 + 4x - 5}$$

Multiply the following polynomials. Laws of exponents. $a^m \cdot a^n = a^{m+n}$, $(a^m)^n = a^{mn}$, $(ab)^n = a^n \cdot b^n$

$$\frac{a^m}{a^n} = a^{m-n}$$

5. $(5x^4y^2)(-6x^5y)$

$$\boxed{-30x^9y^3}$$

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

$$\boxed{15x^4 + 3x^2 - 9x}$$

7. $(4x + 3)^2$

$$(4x + 3)(4x + 3)$$

$$16x^2 + 24x + 12x + 9$$

$$\boxed{16x^2 + 24x + 9}$$

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

$$64x^4 - 16x^2y^3 + 16x^2y^3 - 4y^6$$

$$\boxed{64x^4 - 4y^6}$$

8.5. $\frac{(3y)^0}{6a}$

$$\boxed{\frac{1}{6a}}$$

9. $(2x + 1)(x^2 - 4x + 7)$

$$2x^3 - 8x^2 + 14x$$

$$x^2 - 4x + 7$$

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

10. Simplify: $[10x - 3(2x - 7)] - [4x - 5(2x + 7)]$

$$[10x - 6x + 21] - [4x - 10x - 35]$$

$$[4x + 21] - [-6x - 35]$$

$$4x + 21 + 6x + 35$$

$$\boxed{10x + 56}$$

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

$$(3x - 5)(3x - 5) - [(2x + 7)(2x + 7)]$$

$$9x^2 - 15x - 15x + 25 - [4x^2 + 14x + 14x + 49]$$

$$9x^2 - 30x + 25 - [4x^2 + 28x + 49]$$

$$9x^2 - 30x + 25 - 4x^2 - 28x - 49$$

$$\boxed{5x^2 - 58x - 24}$$

12. Find the greatest common factor between $18p^3q^2$, $8pq^3$, and $20pq^2$ 12.5 Simplify: $\frac{-16a^3b^2x^4y}{-48a^4bxy^3}$

$$12.6. \left(\frac{3bc^2}{4d}\right)^3 = \frac{27b^3c^6}{64d^3}$$

$$2pq^2$$

$$\frac{bx^3}{3ay^2}$$

Factor the following.

13. $7x+42y$

$$7(x+6y)$$

14. $28x^3-21x^2+14x$

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

15. $36x^3y^2+42x^2y^3-6x^2y^2$

$$6x^2y^2(6x+7y-1)$$

16. x^2-100

$$(x+10)(x-10)$$

17. $5-80q^2$

$$5(1-16q^2)$$

$$5(1-4q)(1+4q)$$

18. u^4-81

$$(u^2-9)(u^2+9)$$

$$(u-3)(u+3)(u^2+9)$$

19. x^2+9

$$DNF$$

20. $a^2+8a+16$

$$(a+4)(a+4)$$

21. $49x^2-56x+16$

$$(7x-4)(7x-4)$$

22. $y^2+13y+42$

$$(y+6)(y+7)$$

23. $3t^3-18t^2-48t$

$$3t(t^2-6t-16)$$

$$3t(t-8)(t+2)$$

24. $x^2-11x+30$

$$(x-6)(x-5)$$

25. w^2+4w-5

$$(w+5)(w-1)$$

26. $y^5+4y^4-77y^3$

$$y^3(y^2+4y-77)$$

$$y^3(y+11)(y-7)$$

26.5. $x^2y-xy+10x-10$

$$xy(x-1)+10(x-1)$$

$$(xy+10)(x-1)$$

27. $25t^3-t$

$$t(25t^2-1)$$

$$t(5t-1)(5t+1)$$

28. $2w^2-7w+6$

$$(2w-3)(w-2)$$

29. $5x^2+7x-8$

$$DNF$$

30. $6w^2+11w-7$

$$(3w+7)(2w-1)$$

31. $11y^2+26y-21$

$$(11y-7)(y+3)$$

32. $64c^2-48cd+9d^2$

$$(8c-3d)^2$$

33. $7x^4y^2-175x^2y^4$

$$7x^2y^2(x+5y)(x-5y)$$

34. $x^2-2xy+13x-26y$

$$x(x-2y)+13(x-2y)$$

$$(x-2y)(x+13)$$