

Identify each polynomial as a monomial, binomial, or trinomial. Give the degree of the polynomial.

1. $6x^7 - 2x^3$

2. $-5x^7y^2 - 18x^2y^4 + 7x^6y^3$

3. $x^9 - 12x^2 + x^{10}$

4. $50xy^2 - 30x^6y^4 + 12x^2y^3$

Add or subtract as indicated.

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

6. $(7x^4 - 6xy + 4y) - (4x^4 - 2xy + 5y)$

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

8. $(3x - 6xy + 4y) - (3x - 6xy + 4y)$

9. **Subtract:** $(-6x^3 - 2x^2 + 3x - 4)$ **from** $(-2x^3 + 4x - 7)$

10. **Subtract:** $(-2x^3 + 4x - 7)$ **from** $(-6x^3 - 2x^2 + 3x - 4)$

11. **Add**

$$\begin{array}{r} 18x^4 - 8x^3 + 5x^2 - 9x - 1 \\ + \quad 2x^3 - 5x^2 - 3x + 4 \\ \hline \end{array}$$

12. **Subtract**

$$\begin{array}{r} 18x^4 - 3x^3 + 5x^2 - 9x - 1 \\ - \quad (2x^3 - 2x^2 - 9x + 4) \\ \hline \end{array}$$

13. **Add**

$$\begin{array}{r} 12x^4 - 6x^3 + 3x^2 - 8x - 1 \\ + \quad -2x^3 - 5x^2 - x + 4 \\ \hline \end{array}$$

14. **Subtract**

$$\begin{array}{r} 18x^4 - 8x^3 + 5x^2 - 9x - 1 \\ - \quad (-16x^4 - 2x^3 + 6x^2 + 8x - 2) \\ \hline \end{array}$$

In problems 15. – 30, Simplify each expression.

15. $x^8 \cdot x$

16. $(-4y^3)^2$

17. x^0

18. $x^{10} \cdot x^4$

19. $(-2y^3)^4$

20. $36x^0$

21. $(2x^4)(3x^2)^3$

22. $(2xy^4)(3x^2y^3)$

23. $\left(\frac{4xy^2}{x^2y^3}\right)$

24. $(4x^2)(2x^3)^4$

25. $(3x^4y^4)(4x^3y)$

26. $\left(\frac{3x^5y^2}{4x^4y^5}\right)$

27. $\left(\frac{2x^{-2}y^3}{3x^4y^{-5}}\right)^2$

28. $\frac{30x^7y^{-5}}{5x^{-2}y}$

29. $\left(\frac{x^{-2}y^3}{5x^4y^{-5}}\right)^{-2}$

30. $\frac{-18x^{-7}y^{-5}}{36x^2y^2}$

In Problems 31 – 46, find each product.

31. $2x(3x^2 - 4x + 2)$

32. $(2x + 3)(x - 2)$

33. $-2x(3x^2 - x + 5)$

34. $(3x + 5)(2x - 4)$

35. $(7x - 2)(4x + 2)$

36. $(2x - 3)^2$

37. $(9x - 4)(6x + 4)$

38. $(2x + 3)^2$

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

40. $x^2y(2x^3y^2 - 3x^2y + 4y^2)$

41. $(2x-3)(2x+3)$

42. $-3x^2y(6x^3y^2 - 5x^2y + 4y^2)$

43. $3(x+3y)(x+2y)$

44. $2(2y+3)(y^2 + y + 3)$

45. $(2x-5y)(3x+4y)$

46. $(5y-4)(3y^2 + 2y + 4)$

In problems 47 through 48, divide.

47.
$$\frac{36x^5 - 12x^3 + 28x}{4x}$$

48.
$$\frac{35x^5 - 20x^3 + 60x^2}{5x^2}$$

In problems 49 through 50, use long division.

49.
$$\frac{2x^3 - x^2 + 3x + 2}{2x + 1}$$

50.
$$\frac{4x^3 - 4x^2 + 7x - 9}{2x - 1}$$

Cross Out each expression that is **NOT** a Polynomial

$$\begin{array}{cccccc}
 -25nb & \cancel{\frac{7y}{x}} & \cancel{x^{-2}-10x+7} & \cancel{8-\sqrt{5c}} & & -5w+6-15y \\
 \cancel{\frac{1}{n^2+10}} & 2p^4q^5+p^4wz^3 & \cancel{12x-x^3} & -x-\sqrt{7}y^4 & & 10+\frac{n}{8} \\
 & & 5x^7-4x^5-x^3+15x^2-21x+9 & & &
 \end{array}$$

Give the degree of the polynomial.

Write the opposite of the polynomial

7. $5w^4 - 2 + 11y^3$
 Degree: 4

8. $-25p^6r t^2$
 Degree: 9

9. $8a^5c^4d + 10ac^6df$
 Degree: 10

Opposite: $-5w^4 + 2 - 11y^3$

Opposite: $25p^6r t^2$

Opposite: $-8a^5c^4d - 10ac^6df$

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