Operations with Polynomials

No Work ⇔ No Points

Use Pencil Only ⇔ Be Neat & Organized

Instructions:

- Determine the type of polynomial.

1. $3x^2 - 10$

2. $-5x^2 + 7x - 4$

3. -250

4. $4x^2y^4 - 10x^6y^3 + 3xy - 100$

Instructions:

- Determine the degree and the leading coefficient of each polynomial.

5. $25x^4y^3z$

6. 100

7. $4x^2 - 12x + 5$

8. $-5x^8 + 10x^7 - 3x^{10} - 5x$

9. $3x^2y^3 - 100xy + 7xy^8$

10. $-3x^6y^4 + 100x^3y^7 - x^7y^3 + x^2y^8$

Instructions:

- Simplify.

- Express your final answer in simplest form without any negative exponent.

11. $x^7 \cdot x^{11}$

12. $(x^4)^5$

13. $(-2x^3)^5$

14. x^{-8}

15. $\dfrac{x^{12}}{x^8}$

16. $\dfrac{-12x^3y^8}{30x^5y}$

17. $\dfrac{x}{x^{-9}}$

18. $(3x^4y^5)^4$

19. $(x^3)^4 \cdot (x^6)^2$

20. $(x^{-3})^4$

21. $\dfrac{(x^4)^5}{(x^{-3})^2}$

22. $x^{2/3} \cdot x^{1/4}$

23. $(x^{2/3})^{1/4}$

24. $\dfrac{x^{2/3}}{x^{1/4}}$

Instructions:

- **Simplify.**

- **Express your final answer in scientific notation.**

25. $(275,000,000) \times (800,000,000)$

26. $(1200) \div (800,000,000,000)$

27. $(4 \times 10^{-14}) \times (5 \times 10^{-17})$

28. $\dfrac{1.8 \times 10^{-25}}{7.5 \times 10^{17}}$

Instructions:

- **Simplify.**

- **Express your final answer in simplest form without any negative exponent.**

29. $(-5x^4)(6x^8)$

30. $(-8x^7y^2)(-x^8y^{10})$

31. $7x^4(2x^2 - 7x - 1)$

32. $-4xy^2(-5x^3y - 4x^2y^2 + xy)$

33. $3(2x^2 - 5x + 4) - 2(3x^2 - 7x + 6)$

34. $(3x - 1)(5x + 1)$

35. $(2x^3 + 6))(3x^2 - 2)$

36. $(3x + 5)(9x^2 - 15x + 25)$

37. $(2x - 5)^2$

38. $(2x^3 + 7x)^2$

39. $(2x - 9)(4x^2 + 18x + 81)$

40. $(4x^3 + 5y^2))(4x^3 - 5y^2)$

41. $(5x^2 - 2y^3)(5x^2 + 2y^3)(25x^4 + 4y^6)$

42. $\dfrac{35x^4 - 25x^2 + 5x}{-5x}$

47. $\dfrac{3x^3 - 19x^2 + 17x + 5}{3x - 4}$

43. $\dfrac{28x^4y^3 - 4x^3y^4 + 8xy^5}{4x^2y^5}$

48. $\dfrac{9x^3 - 6x^2 + 8}{3x - 3}$

44. $\dfrac{12x^3 - 4x^2 + 5x - 13}{x - 1}$

49. $\dfrac{x^4 - 13x^2 + 36}{x^2 - x - 6}$

45. $\dfrac{-2x^4 + 5x^2 - 3}{x + 1}$

46. $\dfrac{2x^3 - 5x^2 + 7x - 6}{2x - 3}$

50. $\dfrac{x^4 - y^4}{x^2 + y^2}$

Instructions:

- Use x for any unknown quantity.

- Translate the following into mathematical expression.

51. Two sides of a triangular garden are equal and the third side is 3 meters shorter than the sum of the equal sides. Draw such garden, clearly label all three sides, then find an expression in simplest form for its perimeter.

52. One side of a triangular garden is twice another side and the third side is 2 feet longer than the shorter side of the first two sides. Draw such garden, clearly label all three sides, then find an expression in simplest form for its perimeter.

53. The length and the width of a rectangular pool are two consecutive odd integers. Draw such pool, clearly label all sides, then find an expression in simplest form for its perimeter and its area.

54. The length of a rectangular pool is 5 meters longer than 3 times its width. Draw such pool, clearly label all sides, then find an expression in simplest form for its perimeter and its area.