1. Write $5 + 5x + 9x^3$ in standard form. Then state its degree, leading coefficient, and constant term.

$9x^3 + 5x + 5$

Answer: $9x^3 + 5x + 5$; degree 3; leading coefficient 9; constant term 5

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

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

Answer: $-11x^2 + 5$

3. Subtract: $(8x^2 - 3x) - (8x^2 - 8)$

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

Answer: $-3x + 8$

4. Subtract $-x^2 + x - 6$ from $-4x^2 - 8$.

$(-4x^2 - 8) - (-x^2 + x - 6)$

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

Answer: $-3x^2 - x - 2$

5. Write $3 - 8x^2$ in standard form. Then state its degree, leading coefficient, and constant term.

$-8x^2 + 3$

Answer: $-8x^2 + 3$; degree 2; leading coefficient -8; constant term 3

6. Add: $(-x^2 - 9x - 7) + (4x^2 + 9)$

$-x^2 - 9x - 7 + 4x^2 + 9$

Answer: $3x^2 - 9x + 2$

7. Subtract: $(-5x^2 - 7) - (9x^2 + 3)$

$-5x^2 - 7 - 9x^2 - 3$

Answer: $-14x^2 - 10$

8. Subtract $2x^2 + 2$ from $-3x^2 + 4x$.

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

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

Answer: $-5x^2 + 4x - 2$

9. Write $-3 + 5x^2 - 8x^3$ in standard form. Then state its degree, leading coefficient, and constant term.

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

Answer: $-8x^3 + 5x^2 - 3$; degree 3; leading coefficient -8; constant term -3

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10. Add: $(6x^2 - 9) + (-3x^2 - 3)$

$6x^2 - 9 - 3x^2 - 3$

Answer: $3x^2 - 12$

11. Subtract: $(2x^2 - 3) - (5x^2 + 9x)$

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

Answer: $-3x^2 - 9x - 3$

12. Subtract $-4x^2 + 8x + 6$ from $-5x^2 - 6$.

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

$-5x^2 - 6 + 4x^2 - 8x - 6$

Answer: $-x^2 - 8x - 12$

13. Write $-7x^3 + 9x - 8x^2 - 3$ in standard form. Then state its degree, leading coefficient, and constant term.

$-7x^3 - 8x^2 + 9x - 3$

Answer: $-7x^3 - 8x^2 + 9x - 3$; degree 3; leading coefficient -7; constant term -3

14. Add: $(x^2 - 9x + 1) + (-2x^2 + 2x - 8)$

$x^2 - 9x + 1 - 2x^2 + 2x - 8$

Answer: $-x^2 - 7x - 7$

15. Subtract: $(-9x^2 + 4x) - (7x^2 + 8)$

$-9x^2 + 4x - 7x^2 - 8$

Answer: $-16x^2 + 4x - 8$

16. Subtract $9x^2 - 7$ from $-4x^2 + 4x$.

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

$-4x^2 + 4x - 9x^2 + 7$

Answer: $-13x^2 + 4x + 7$

17. Write $2 + 9x^3 - 5x^4 - 7x^2$ in standard form. Then state its degree, leading coefficient, and constant term.

$-5x^4 + 9x^3 - 7x^2 + 2$

Answer: $-5x^4 + 9x^3 - 7x^2 + 2$; degree 4; leading coefficient -5; constant term 2

18. Add: $(9x^2 + 5) + (x^2 + 4x - 2)$

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

Answer: $10x^2 + 4x + 3$

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19. Subtract: $(4x^2 - 9x) - (4x^2 - 8)$

$4x^2 - 9x - 4x^2 + 8$

Answer: $-9x + 8$

20. Subtract $2x^2 - 5x + 9$ from $-8x^2 + 7$.

$(-8x^2 + 7) - (2x^2 - 5x + 9)$

$-8x^2 + 7 - 2x^2 + 5x - 9$

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

21. Subtract $3x^2 - 5x + 2$ from the sum of $(x^2 + 4x - 7)$ and $(2x^2 + x + 3)$. ★ challenge

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

$3x^2 + 5x - 4$

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

Answer: $10x - 6$

22. A rectangle has length $2x + 5$ and width $x - 3$. Write its perimeter as a polynomial in standard form. ★ challenge

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

$4x + 10 + 2x - 6$

Answer: $6x + 4$

23. Subtract: $(4x^3 - 2x + 1) - (x^3 + 3x^2 - 6)$ ★ challenge

$4x^3 - 2x + 1 - x^3 - 3x^2 + 6$

Answer: $3x^3 - 3x^2 - 2x + 7$

24. What polynomial must be added to $2x^2 - 3x + 4$ to get $5x^2 + x - 2$? ★ challenge

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

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

25. Is $4x^2 - 3x + 5$ a monomial, binomial, or trinomial? What is its degree? ★ challenge

3 terms → trinomial

Answer: trinomial; degree 2

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