

Add, Subtract and Multiply Polynomials

#7

ADDING AND SUBTRACTING POLYNOMIALS Find the sum or difference.

13. $(8x^2 + 1) + (3x^2 - 2)$ 14. $(3x^3 + 10x + 5) - (x^3 - 4x + 6)$
15. $(x^2 - 6x + 5) - (x^2 + x - 2)$ 16. $(16 - 13x) + (10x - 11)$
17. $(7x^3 - 1) - (15x^3 + 4x^2 - x + 3)$ 18. $8x + (14x + 3 - 41x^2 + x^3)$
19. $(4x^2 - 11x + 10) + (5x - 31)$ 20. $(9x^3 - 4 + x^2 + 8x) - (7x^3 - 3x + 7)$
21. $(-3x^3 + x - 11) - (4x^3 + x^2 - x)$ 22. $(6x^2 - 19x + 5) - (19x^2 - 4x + 9)$
23. $(10x^3 - 4x^2 + 3x) - (x^3 - x^2 + 1)$ 24. $(50x - 3) + (8x^3 + 7x^2 + x + 4)$
25. $(10x - 3 + 7x^2) + (x^3 - 2x + 17)$ 26. $(3x^3 - 5x^4 - 10x + 1) + (17x^4 - x^3)$

MULTIPLYING POLYNOMIALS Find the product of the polynomials.

27. $x(x^2 + 6x - 7)$ 28. $10x^2(x - 5)$ 29. $-4x(x^2 - 8x + 3)$
30. $5x(3x^2 - x + 3)$ 31. $(x - 4)(x - 7)$ 32. $(x + 9)(x - 2)$
33. $(x + 3)(x^2 - 4x + 9)$ 34. $(x + 8)(x^2 - 7x - 3)$ 35. $(2x + 5)(3x^3 - x^2 + x)$
36. $(6x + 2)(2x^2 - 6x + 1)$ 37. $(x + 11)(x^2 - 5x + 9)$ 38. $(4x^2 - 1)(x^2 - 6x + 9)$
39. $(x - 1)(x^3 + 2x^2 + 2)$ 40. $(x + 1)(5x^3 - x^2 + x - 4)$
41. $(3x^2 - 2)(x^2 + 4x + 3)$ 42. $(-x^3 - 2)(x^2 + 3x - 3)$
43. $(x^2 + x + 4)(2x^2 - x + 1)$ 44. $(x^2 - x - 3)(x^2 + 4x + 2)$

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MULTIPLYING POLYNOMIALS Find the product of the polynomials.

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36. $(6x + 2)(2x^2 - 6x + 1)$ 37. $(x + 11)(x^2 - 5x + 9)$ 38. $(4x^2 - 1)(x^2 - 6x + 9)$
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ANSWERS

$$13. (8x^2 + 1) + (3x^2 - 2) = 11x^2 - 1$$

$$14. 3x^3 + 10x + 5 - x^3 + 4x - 6 = 2x^3 + 14x - 1$$

$$15. x^2 - 6x + 5 - x^2 - x + 2 = -7x + 7$$

$$16. 16 - 13x + 10x - 11 = -3x + 5$$

$$17. 7x^3 - 1 - 15x^3 - 4x^2 + x - 3 = -8x^3 - 4x^2 + x - 4$$

$$18. 8x + 14x + 3 - 41x^2 + x^3 = x^3 - 41x^2 + 22x + 3$$

$$19. 4x^2 - 11x + 10 + 5x - 31 = 4x^2 - 6x - 21$$

$$20. 9x^3 - 4 + x^2 + 8x - 7x^3 + 3x - 7$$

$$= 2x^3 + x^2 + 11x - 11$$

$$21. -3x^3 + x - 11 - 4x^3 - x^2 + x$$

$$= -7x^3 - x^2 + 2x - 11$$

$$22. 6x^2 - 19x + 5 - 19x^2 + 4x - 9 = -13x^2 - 15x - 4$$

$$23. 10x^3 - 4x^2 + 3x - x^3 + x^2 - 1 = 9x^3 - 3x^2 + 3x - 1$$

$$24. 50x - 3 + 8x^3 + 7x^2 + x + 4 = 8x^3 + 7x^2 + 51x + 1$$

$$25. 10x - 3 + 7x^2 + x^3 - 2x + 17 = x^3 + 7x^2 + 8x + 14$$

$$26. 3x^3 - 5x^4 - 10x + 1 + 17x^4 - x^3 = 12x^4 + 2x^3 - 10x + 1$$

$$27. x(x^2 + 6x - 7) = x^3 + 6x^2 - 7x$$

$$28. 10x^2(x - 5) = 10x^3 - 50x^2$$

$$29. -4x(x^2 - 8x + 3) = -4x^3 + 32x^2 - 12x$$

$$30. 5x(3x^2 - x + 3) = 15x^3 - 5x^2 + 15x$$

$$31. (x - 4)(x - 7) = x^2 - 11x + 28$$

$$32. (x + 9)(x - 2) = x^2 + 7x - 18$$

$$33. (x + 3)(x^2 - 4x + 9)$$

$$= x(x^2 - 4x + 9) + 3(x^2 - 4x + 9)$$

$$= x^3 - 4x^2 + 9x + 3x^2 - 12x + 27$$

$$= x^3 - x^2 - 3x + 27$$

$$34. (x + 8)(x^2 - 7x - 3)$$

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

$$= x^3 - 7x^2 - 3x + 8x^2 - 56x - 24$$

$$= x^3 + x^2 - 59x - 24$$

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

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

$$= 6x^4 - 2x^3 + 2x^2 + 15x^3 - 5x^2 + 5x$$

$$= 6x^4 + 13x^3 - 3x^2 + 5x$$

$$36. (6x + 2)(2x^2 - 6x + 1)$$

$$= 6x(2x^2 - 6x + 1) + 2(2x^2 - 6x + 1)$$

$$= 12x^3 - 36x^2 + 6x + 4x^2 - 12x + 2$$

$$= 12x^3 - 32x^2 - 6x + 2$$

$$37. (x + 11)(x^2 - 5x + 9)$$

$$= x(x^2 - 5x + 9) + 11(x^2 - 5x + 9)$$

$$= x^3 - 5x^2 + 9x + 11x^2 - 55x + 99$$

$$= x^3 + 6x^2 - 46x + 99$$

$$38. (4x^2 - 1)(x^2 - 6x + 9)$$

$$= 4x^2(x^2 - 6x + 9) - 1(x^2 - 6x + 9)$$

$$= 4x^4 - 24x^3 + 36x^2 - x^2 + 6x - 9$$

$$= 4x^4 - 24x^3 + 35x^2 + 6x - 9$$

$$39. (x - 1)(x^3 + 2x^2 + 2)$$

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

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

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

$$40. (x + 1)(5x^3 - x^2 + x - 4)$$

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

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

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

$$41. (3x^2 - 2)(x^2 + 4x + 3)$$

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

$$= 3x^4 + 12x^3 + 9x^2 - 2x^2 - 8x - 6$$

$$= 3x^4 + 12x^3 + 7x^2 - 8x - 6$$

$$42. (-x^3 - 2)(x^2 + 3x - 3)$$

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

$$= -x^5 - 3x^4 + 3x^3 - 2x^2 - 6x + 6$$

$$43. (x^2 + x + 4)(2x^2 - x + 1)$$

$$= x^2(2x^2 - x + 1) + x(2x^2 - x + 1) + 4(2x^2 - x + 1)$$

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

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

$$44. (x^2 - x - 3)(x^2 + 4x + 2)$$

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

$$= x^4 + 4x^3 + 2x^2 - x^3 - 4x^2 - 2x - 3x^2 - 12x - 6$$

$$= x^4 + 3x^3 - 5x^2 - 14x - 6$$