

ANSWER PRESENTATION TOOL

Algebra 2 - Student Edit

4

2 - Practice

1-45

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Show Solu

ODD

$$\begin{aligned} 1. & (3x^2 + 4x - 1) + (-2x^2 - 3x + 2) \\ &= 3x^2 + 4x - 1 - 2x^2 - 3x + 2 \\ &= x^2 + x + 1 \end{aligned}$$

$$\begin{aligned} 3. & (12x^5 - 3x^4 + 2x - 5) + (8x^4 - 3x^3 + 4x + 1) \\ &= 12x^5 - 3x^4 + 2x - 5 + 8x^4 - 3x^3 + 4x + 1 \\ &= 12x^5 + 5x^4 - 3x^3 + 6x - 4 \end{aligned}$$

$$\begin{aligned} 5. & (7x^6 + 2x^5 - 3x^2 + 9x) + (5x^5 + 8x^3 - 6x^2 + 2x - 5) \\ &= 7x^6 + 2x^5 - 3x^2 + 9x + 5x^5 + 8x^3 - 6x^2 + 2x - 5 \\ &= 7x^6 + 7x^5 + 8x^3 - 9x^2 + 11x - 5 \end{aligned}$$

$$\begin{aligned} 7. & (3x^3 - 2x^2 + 4x - 8) - (5x^3 + 12x^2 - 3x - 4) \\ &= 3x^3 - 2x^2 + 4x - 8 - 5x^3 - 12x^2 + 3x + 4 \\ &= -2x^3 - 14x^2 + 7x - 4 \end{aligned}$$

$$\begin{aligned} 9. & (5x^6 - 2x^4 + 9x^3 + 2x - 4) - (7x^5 - 8x^4 + 2x - 11) \\ &= 5x^6 - 2x^4 + 9x^3 + 2x - 4 - 7x^5 + 8x^4 - 2x + 11 \\ &= 5x^6 - 7x^5 + 6x^4 + 9x^3 + 7 \end{aligned}$$

$$\begin{aligned} 11. & (8x^5 + 6x^3 - 2x^2 + 10x) - (9x^5 - x^3 - 13x^2 + 4) \\ & = 8x^5 + 6x^3 - 2x^2 + 10x - 9x^5 + x^3 + 13x^2 - 4 \\ & = -x^5 + 7x^3 + 11x^2 + 10x - 4 \end{aligned}$$

$$13. 7x^3(5x^2 + 3x + 1) = 35x^5 + 21x^4 + 7x^3$$

$$\begin{aligned} 15. & (5x^2 - 4x + 6)(-2x + 3) \\ & = (5x^2 - 4x + 6)(-2x) + (5x^2 - 4x + 6)3 \\ & = -10x^3 + 8x^2 - 12x + 15x^2 - 12x + 18 \\ & = -10x^3 + 23x^2 - 24x + 18 \end{aligned}$$

$$\begin{aligned} 17. & (x^2 - 2x - 4)(x^2 - 3x - 5) \\ & = x^2(x^2 - 3x - 5) - 2x(x^2 - 3x - 5) - 4(x^2 - 3x - 5) \\ & = x^4 - 3x^3 - 5x^2 - 2x^3 + 6x^2 + 10x - 4x^2 + 12x + 20 \\ & = x^4 - 5x^3 - 3x^2 + 22x + 20 \end{aligned}$$

$$\begin{aligned} 19. & (3x^3 - 9x + 7)(x^2 - 2x + 1) \\ & = 3x^3(x^2 - 2x + 1) - 9x(x^2 - 2x + 1) + 7(x^2 - 2x + 1) \\ & = 3x^5 - 6x^4 + 3x^3 - 9x^3 + 18x^2 - 9x + 7x^2 - 14x + 7 \\ & = 3x^5 - 6x^4 - 6x^3 + 25x^2 - 23x + 7 \end{aligned}$$

$$\begin{aligned} 21. & (x - 3)(x + 2)(x + 4) = (x^2 - x - 6)(x + 4) \\ & = (x^2 - x - 6)x + (x^2 - x - 6)4 \\ & = x^3 - x^2 - 6x + 4x^2 - 4x - 24 \\ & = x^3 + 3x^2 - 10x - 24 \end{aligned}$$

$$\begin{aligned}
 23. & (x - 2)(3x + 1)(4x - 3) \\
 &= (3x^2 - 5x - 2)(4x - 3) \\
 &= (3x^2 - 5x - 2)(4x) - (3x^2 - 5x - 2)3 \\
 &= 12x^3 - 20x^2 - 8x - 9x^2 + 15x + 6 \\
 &= 12x^3 - 29x^2 + 7x + 6
 \end{aligned}$$

$$\begin{aligned}
 25. & (3x - 4)(5 - 2x)(4x + 1) \\
 &= (-6x^2 + 23x - 20)(4x + 1) \\
 &= (-6x^2 + 23x - 20)(4x) + (-6x^2 + 23x - 20)1 \\
 &= -24x^3 + 92x^2 - 80x - 6x^2 + 23x - 20 \\
 &= -24x^3 + 86x^2 - 57x - 20
 \end{aligned}$$

27. Expand and simplify the expression on the left side of the equation.

$$\begin{aligned}
 (a + b)(a - b) &= (a + b)a - (a + b)b \\
 &= a^2 + ab - ab - b^2 \\
 &= a^2 - b^2
 \end{aligned}$$

The simplified left side equals the right side of the original identity. So, the identity

$$(a + b)(a - b) = a^2 - b^2 \text{ is true.}$$

Consider two whole numbers, 19 and 21. Note that $19 = 20 - 1$ and $21 = 20 + 1$. The product of 19 and 21 can be solved using the given identity as

$$\begin{aligned}
 (21)(19) &= (20 + 1)(20 - 1) \\
 &= 20^2 - 1^2 \\
 &= 400 - 1 \\
 &= 399.
 \end{aligned}$$

$$\begin{aligned} 29. (x - 9)(x + 9) &= x^2 - 9^2 \\ &= x^2 - 81 \end{aligned}$$

$$\begin{aligned} 31. (3c - 5)^2 &= (3c)^2 - 2(3c)(5) + 5^2 \\ &= 9c^2 - 30c + 25 \end{aligned}$$

$$\begin{aligned} 33. (7h + 4)^2 &= (7h)^2 + 2(7h)(4) + 4^2 \\ &= 49h^2 + 56h + 16 \end{aligned}$$

$$\begin{aligned} 35. (2k + 6)^3 &= (2k)^3 + 3(2k)^2(6) + 3(2k)(6)^2 + (6)^3 \\ &= 8k^3 + 72k^2 + 216k + 216 \end{aligned}$$

$$\begin{aligned} 37. (pq - 2)^3 &= (pq)^3 - 3(pq)^2(2) + 3(pq)(2)^2 - (2)^3 \\ &= p^3q^3 - 6p^2q^2 + 12pq - 8 \end{aligned}$$

39. The negative was not distributed through the entire second set of parentheses.

$$\begin{aligned} (x^2 - 3x + 4) - (x^3 + 7x - 2) &= x^2 - 3x + 4 - x^3 - 7x + 2 \\ &= -x^3 + x^2 - 10x + 6 \end{aligned}$$

41. The coefficients from the second row of Pascal's Triangle are 1, 2, and 1.

$$\begin{aligned} (6m + 2)^2 &= 1(6m)^2 + 2(6m)(2) + 1(2)^2 \\ &= 36m^2 + 24m + 4 \end{aligned}$$

- 43.** The coefficients from the fourth row of Pascal's Triangle are 1, 4, 6, 4, and 1.

$$\begin{aligned}(2q - 3)^4 &= 1(2q)^4 + 4(2q)^3(-3) \\ &\quad + 6(2q)^2(-3)^2 + 4(2q)(-3)^3 + 1(-3)^4 \\ &= 16q^4 - 96q^3 + 216q^2 - 216q + 81\end{aligned}$$

- 45.** The coefficients from the fifth row of Pascal's Triangle are 1, 5, 10, 10, 5, and 1.

$$\begin{aligned}(yz + 1)^5 &= 1(yz)^5 + 5(yz)^4(1) + 10(yz)^3(1)^2 \\ &\quad + 10(yz)^2(1)^3 + 5(yz)(1)^4 + 1(1)^5 \\ &= y^5z^5 + 5y^4z^4 + 10y^3z^3 + 10y^2z^2 + 5yz + 1\end{aligned}$$

