

Simplify the expressions for (1-10). Expand the expressions for (11-30).

1. $(-4x + 3) + (-2x - 4)$

Solution:

$$\begin{aligned}(-4x + 3) + (-2x - 4) &= -4x + 3 - 2x - 4 \\&= -4x - 2x + 3 - 4 \\&= -6x - 1\end{aligned}$$

2. $(10x - 7) + (9x - 9)$

Solution:

$$\begin{aligned}(10x - 7) + (9x - 9) &= 10x - 7 + 9x - 9 \\&= 10x + 9x - 7 - 9 \\&= 19x - 16\end{aligned}$$

3. $(-5x - 2) + (5x - 1)$

Solution:

$$\begin{aligned}(-5x - 2) + (5x - 1) &= -5x - 2 + 5x - 1 \\&= -5x + 5x - 2 - 1 \\&= -3\end{aligned}$$

4. $(-7x - 2) + (10x - 6)$

Solution:

$$\begin{aligned}(-7x - 2) + (10x - 6) &= -7x - 2 + 10x - 6 \\&= -7x + 10x - 2 - 6 \\&= 3x - 8\end{aligned}$$

5. $(-5x - 9) + (3x - 5)$

Solution:

$$\begin{aligned}(-5x - 9) + (3x - 5) &= -5x - 9 + 3x - 5 \\&= -5x + 3x - 9 - 5 \\&= -2x - 14\end{aligned}$$

6. $(-5x + 1) - (4x + 5)$

Solution:

$$\begin{aligned}(-5x + 1) - (4x + 5) &= -5x + 1 - 4x - 5 \\&= -5x - 4x + 1 - 5 \\&= -9x - 4\end{aligned}$$

7. $(8x + 3) - (4x - 9)$

Solution:

$$\begin{aligned}(8x + 3) - (4x - 9) &= 8x + 3 - 4x + 9 \\&= 8x - 4x + 3 + 9 \\&= 4x + 12\end{aligned}$$

8. $(-10x + 2) - (2x + 1)$

Solution:

$$\begin{aligned}(-10x + 2) - (2x + 1) &= -10x + 2 - 2x - 1 \\&= -10x - 2x + 2 - 1 \\&= -12x + 1\end{aligned}$$

9. $(10x + 8) - (5x - 1)$

Solution:

$$\begin{aligned}(10x + 8) - (5x - 1) &= 10x + 8 - 5x + 1 \\&= 10x - 5x + 8 + 1 \\&= 5x + 9\end{aligned}$$

10. $(-2x + 8) - (-8x + 2)$

Solution:

$$\begin{aligned}(-2x + 8) - (-8x + 2) &= -2x + 8 + 8x - 2 \\&= -2x + 8x + 8 - 2 \\&= 6x + 6\end{aligned}$$

11. $(2x - 10)(6x + 5)$

Solution:

$$\begin{aligned}(2x - 10)(6x + 5) &= 12x^2 + 10x - 60x - 50 \\ &= 12x^2 - 50x - 50\end{aligned}$$

12. $(6x - 2)(8x - 7)$

Solution:

$$\begin{aligned}(6x - 2)(8x - 7) &= 48x^2 - 42x - 16x + 14 \\ &= 48x^2 - 58x + 14\end{aligned}$$

13. $(-4x - 4)(-9x + 8)$

Solution:

$$\begin{aligned}(-4x - 4)(-9x + 8) &= 36x^2 - 32x + 36x - 32 \\ &= 36x^2 + 4x - 32\end{aligned}$$

14. $(-3x - 1)(2x - 2)$

Solution:

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

15. $(x - 5)(-x + 1)$

Solution:

$$\begin{aligned}(x - 5)(-x + 1) &= -x^2 + x + 5x - 5 \\ &= -x^2 + 6x - 5\end{aligned}$$

16. $(-6 - 2x)(10 - 9x)$

Solution:

$$\begin{aligned}(-6 - 2x)(10 - 9x) &= -60 + 54x - 20x + 18x^2 \\ &= -60 + 34x + 18x^2 \\ &= 18x^2 + 34x - 60\end{aligned}$$

17. $(-7 + 4x)(10 - 4x)$

Solution:

$$\begin{aligned}(-7 + 4x)(10 - 4x) &= -70 + 28x + 40x - 16x^2 \\ &= -70 + 68x - 16x^2 \\ &= -16x^2 + 68x - 70\end{aligned}$$

18. $(6 + 8x)(-4 - 5x)$

Solution:

$$\begin{aligned}(6 + 8x)(-4 - 5x) &= -24 - 30x - 32x - 40x^2 \\ &= -24 - 62x - 40x^2 \\ &= -40x^2 - 62x - 24\end{aligned}$$

19. $(-8 - 8x)(9 - 6x)$

Solution:

$$\begin{aligned}(-8 - 8x)(9 - 6x) &= -72 + 48x - 72x + 48x^2 \\ &= -72 - 24x + 48x^2 \\ &= 48x^2 - 24x - 72\end{aligned}$$

20. $(9 + 2x)(-7 - 3x)$

Solution:

$$\begin{aligned}(9 + 2x)(-7 - 3x) &= -63 - 27x - 14x - 6x^2 \\ &= -63 - 41x - 6x^2 \\ &= -6x^2 - 41x - 63\end{aligned}$$

21. $(x + 8)^2$

Solution:

$$\begin{aligned}(x + 8)^2 &= (x + 8)(x + 8) \\ &= x^2 + 8x + 8x + 64 \\ &= x^2 + 16x + 64\end{aligned}$$

22. $(10x + 6)^2$

Solution:

$$\begin{aligned}(10x + 6)^2 &= (10x + 6)(10x + 6) \\ &= 100x^2 + 60x + 60x + 36 \\ &= 100x^2 + 120x + 36\end{aligned}$$

23. $(7x - 8)^2$

Solution:

$$\begin{aligned}(7x - 8)^2 &= (7x - 8)(7x - 8) \\ &= 49x^2 - 56x - 56x + 64 \\ &= 49x^2 - 112x + 64\end{aligned}$$

24. $(3x - 6)^2$

Solution:

$$\begin{aligned}(3x - 6)^2 &= (3x - 6)(3x - 6) \\ &= 9x^2 - 18x - 18x + 36 \\ &= 9x^2 - 36x + 36\end{aligned}$$

25. $(2x + 10)^2$

Solution:

$$\begin{aligned}(2x + 10)^2 &= (2x + 10)(2x + 10) \\ &= 4x^2 + 20x + 20x + 100 \\ &= 4x^2 + 40x + 100\end{aligned}$$

26. $(x^2 + 4x - 4)(4x - 5)$

Solution:

$$\begin{aligned}(x^2 + 4x - 4)(4x - 5) &= 4x^3 - 5x^2 + 16x^2 - 20x - 16x + 20 \\ &= 4x^3 + 11x^2 - 36x + 20\end{aligned}$$

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

Solution:

$$\begin{aligned}(x^2 - 3x - 1)(4x - 5) &= 4x^3 - 5x^2 - 12x^2 + 15x - 4x + 5 \\ &= 4x^3 - 17x^2 + 11x + 5\end{aligned}$$

28. $(3x^2 - x + 4)(2x + 5)$

Solution:

$$\begin{aligned}(3x^2 - x + 4)(2x + 5) &= 6x^3 + 15x^2 - 2x^2 - 5x + 8x + 20 \\ &= 6x^3 + 13x^2 + 3x + 20\end{aligned}$$

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

Solution:

$$\begin{aligned}(x^2 - 4x + 1)(x - 4) &= x^3 - 4x^2 - 4x^2 + 16x + x - 4 \\ &= x^3 - 8x^2 + 17x - 4\end{aligned}$$

30. $(5x^2 + x + 4)(2x - 4)$

Solution:

$$\begin{aligned}(5x^2 + x + 4)(2x - 4) &= 10x^3 - 20x^2 + 2x^2 - 4x + 8x - 16 \\ &= 10x^3 - 18x^2 + 4x - 16\end{aligned}$$