Notes 2.5.3 & 2.5.4 Expand each product

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

$$x^2 + 3x$$
$$+ 2x + 6$$
$$x^2 + 5x + 6$$

2. $(x + 4)(x + 5)$

3. $(x + 10)(x + 4)$

4. $(x - 6)(x - 4)$

$$x^2 - 4x$$
$$- 6x + 24$$
$$x^2 - 10x + 24$$

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

6. $(x - 1)(x - 9)$

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

$$x^2 - 8x$$
$$+ 3x - 24$$
$$x^2 - 5x - 24$$

8. $(x + 5)(x - 2)$

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

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

$$x^2 + 9x$$
$$- 3x - 27$$
$$x^2 + 6x - 27$$

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

12. $(x - 12)(x + 1)$

13. $(2x - 7)(3x - 5)$

$$6x^2 - 10x$$
$$- 21x + 35$$
$$6x^2 - 31x + 35$$

14. $(3x - 2)(6x - 5)$

15. $(4x + 10)(9x + 1)$

16. $(5x + 8)(2x - 3)$

$$10x^2 - 15x$$
$$+ 16x - 24$$
$$10x^2 + x - 24$$

17. $(8x + 1)(7x - 6)$

18. $(6x - 5)(x + 12)$

19. $(x + 5)^2$

$(x + 5)(x + 5)$

$x^2 + 5x$
$\quad + 5x + 25$
$x^2 + 10x + 25$

20. $(x + 10)^2$

21. $(x + 9)^2$

22. $(x - 6)^2$

$(x - 6)(x - 6)$

$x^2 - 6x$
$\quad - 6x + 36$
$x^2 - 12x + 36$

23. $(x - 3)^2$

24. $(x - 12)^2$

25. $(3x + 4)^2$

$(3x + 4)(3x + 4)$

$9x^2 + 12x$
$\quad + 12x + 16$
$9x^2 + 24x + 16$

26. $(2x + 7)^2$

27. $(4x + 15)^2$

28. $(5x - 8)^2$

$(5x - 8)(5x - 8)$

$25x^2 - 40x$
$\quad - 40x + 64$
$25x^2 - 80x + 64$

29. $(10x - 1)^2$

30. $(9x - 2)^2$

31. $(2x + 5)(x^2 + 3x - 10)$

$2x^3 + 6x^2 - 20x$
$\quad + 5x^2 + 15x - 50$
$2x^3 + 11x^2 - 5x - 50$

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

33. $(x+8)(x-8)$

$$\begin{array}{r} x^2-8x \\ +8x-64 \\ \hline x^2 \quad - \quad 64 \end{array}$$

34. $(y+6)(y-6)$

35. $(m-10)(m+10)$

36. $(2x+7)(2x-7)$

$$\begin{array}{r} 4x^2-14x \\ +14x-49 \\ \hline 4x^2 \quad - \quad 49 \end{array}$$

37. $(4w+9)(4w-9)$

38. $(11n-3)(11n+3)$

39. $(5x+2y)(5x-2y)$

$$\begin{array}{r} 25x^2-10xy \\ +10xy-4y^2 \\ \hline 25x^2 \quad - \quad 4y^2 \end{array}$$

40. $(3p-8q)(3p+8q)$

41. $(6a+9c)(6a-9c)$

42. $(x+5)(x^2-5x+25)$

$$\begin{array}{r} x^3-5x^2+25x \\ +5x^2-25x+125 \\ \hline x^3 \quad + \quad 125 \end{array}$$

43. $(x+9)(x^2-9x+81)$

44. $(4x+3)(16x^2-12x+9)$

45. $(x-2)(x^2+2x+4)$

$$\begin{array}{r} x^3+2x^2+4x \\ -2x^2-4x-8 \\ \hline x^3 \quad - \quad 8 \end{array}$$

46. $(x-10)(x^2+10x+100)$

47. $(6x-8)(36x^2+48x+64)$

48. $(m-n)(m^2+mn+n^2)$

49. $(11r+t)(121r^2-11rt+t^2)$

50. $(7a+4c)(49a^2-28ac+16c^2)$

Expand each product ANSWERS

2. $x^2 + 9x + 20$

3. $x^2 + 14x + 40$

5. $x^2 - 8x + 15$

6. $x^2 - 10x + 9$

8. $x^2 + 3x - 10$

9. $x^2 + 3x - 28$

11. $x^2 + 4x - 60$

12. $x^2 - 11x - 12$

14. $18x^2 - 27x + 10$

15. $36x^2 + 94x + 10$

17. $56x^2 - 41x - 6$

18. $6x^2 + 67x - 60$

20. $x^2 + 20x + 100$

21. $x^2 + 18x + 81$

23. $x^2 - 6x + 9$

24. $x^2 - 24x + 144$

26. $4x^2 + 28x + 49$

27. $16x^2 + 120x + 225$

29. $100x^2 - 20x + 1$

30. $81x^2 - 36x + 4$

32. $3x^3 + 20x^2 - 38x + 8$

34. $y^2 - 36$

35. $m^2 - 100$

37. $16w^2 - 81$

38. $121n^2 - 9$

40. $9p^2 - 64q^2$

41. $36a^2 - 81c^2$

43. $x^3 + 729$

44. $64x^3 + 27$

46. $x^3 - 1000$

47. $216x^3 - 512$

48. $m^3 - n^3$

49. $1331r^3 + t^3$

50. $343a^3 + 64c^3$