Calculus Expanding Practice #1

Expand and simplify fully

1. $(x + 7)(x - 12)(3x + 7)$
2. $(2x - 2y - 1)(2x - 2y + 1)$
3. $(3x + 4y - 4)(2x + 4y + 5)$
4. $(3x - 8)(2x + 7)(2x + 5)$
5. $(4x^2 - 2x - 1)(3x^2 - 3x + 2)$
6. $(x + 13)(2x + 5)(x + 5)$
7. $(2x + 3y - 6)(x + 6y - 2)$
8. $(3x^2 + 3x - 4)(4x^2 + 10x + 2)$
9. $(x + 2y + 2)(4x - 3y - 5)$
10. $(5x^2 + x - 1)(2x^2 + 9x - 1)$

11. $(x + 12)(x + 2)(x + 8)$
12. $(x + 3y - 1)(x - 2y - 5)$
13. $(2x^2 + 4x + 3)(x^2 - 6x - 4)$
14. $(4x - 3)(x - 3)(2x + 3)$
15. $(4x - y + 1)(4x + 5y - 2)$
16. $(3x^2 + 2x - 6)(3x^2 + 9x - 5)$
17. $(5x - y + 4)(3x - y - 3)$
18. $(3x - y - 7)(2x - 4y - 4)$
19. $(7x + 3)(x - 8)(x + 2)$
20. $(3x^2 + 2x + 1)(2x^2 + 4x - 6)$

Answers: Calculus Expanding Practice #1

Answers can be in any order, but it is usual to go down in powers

1. $(x + 7)(x - 12)(3x + 7) = 3x^3 - 8x^2 - 287x - 588$
2. $(2x - 2y - 1)(2x - 2y + 1) = 4x^2 + 4y^2 - 8xy - 1$
3. $(3x + 4y - 4)(2x + 4y + 5) = 6x^2 + 7x + 16y^2 + 4y + 20xy - 20$
4. $(3x - 8)(2x + 7)(2x + 5) = 12x^3 + 40x^2 - 87x - 280$
5. $(4x^2 - 2x - 1)(3x^2 - 3x + 2) = 12x^4 - 18x^3 + 1x^2 - x - 2$
6. $(x + 13)(2x + 5)(x + 5) = 2x^3 + 4x^2 + 220x + 325$
7. $(2x + 3y - 6)(x + 6y - 2) = 2x^2 - 10x + 18y^2 - 42y + 15xy + 12$
8. $(3x^2 + 3x - 4)(4x^2 + 10x + 2) = 12x^4 + 42x^3 + 20x^2 - 34x - 8$
9. $(x + 2y + 2)(4x - 3y - 5) = 4x^2 + 3x - 6y^2 - 16y + 5xy - 10$
10. $(5x^2 + x - 1)(2x^2 + 9x - 1) = 10x^4 + 47x^3 + 2x^2 - 10x + 1$

11. $(x + 12)(x + 2)(x + 8) = x^3 + 22x^2 + 136x + 192$
12. $(x + 3y - 1)(x - 2y - 5) = x^2 - 6x - 6y^2 - 13y + xy + 5$
13. $(2x^2 + 4x + 3)(x^2 - 6x - 4) = 2x^4 - 8x^3 - 29x^2 - 34x - 12$
14. $(4x - 3)(x - 3)(2x + 3) = 8x^3 - 18x^2 - 27x + 27$
15. $(4x - y + 1)(4x + 5y - 2) = 16x^2 - 4x - 5y^2 + 7y + 16xy - 2$
16. $(3x^2 + 2x - 6)(3x^2 + 9x - 5) = 9x^4 + 33x^3 - 15x^2 - 64x + 30$
17. $(5x - y + 4)(3x - y - 3) = 15x^2 - 3x + y^2 - y - 8xy - 12$
18. $(3x - y - 7)(2x - 4y - 4) = 6x^2 - 26x + 4y^2 + 32y - 14xy + 28$
19. $(7x + 3)(x - 8)(x + 2) = 7x^3 - 39x^2 - 130x - 48$
20. $(3x^2 + 2x + 1)(2x^2 + 4x - 6) = 6x^4 + 16x^3 - 8x^2 - 8x - 6$