Calculus Expanding Practice #3

Expand and simplify fully

1. $(5x - 9)(2x - 11)(x + 2)$

2. $(3x + 2y - 4)(x + 10y - 6)$

3. $(x + 14)(x - 12)(x + 7)$

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

5. $(x + 4)(x - 5)(3x + 5)$

6. $(5x^2 + 3x + 3)(3x^2 - 9x - 1)$

7. $(7x + 5)(2x - 1)(x + 7)$

8. $(5x + y - 7)(3x - 3y - 5)$

9. $(x^2 + 4x - 7)(x^2 - 4x + 4)$

10. $(3x - 2y - 6)(x + 9y + 2)$

11. $(3x^2 + 2x - 5)(3x^2 - x - 4)$

12. $(6x + 13)(x - 10)(2x + 3)$

13. $(5x^2 + 3x + 3)(x^2 + 4x - 4)$

14. $(3x - 2y - 2)(4x - 7y - 5)$

15. $(4x - y - 7)(2x + 6y - 2)$

16. $(2x^2 - 2x - 8)(3x^2 - 7x - 5)$

17. $(x + 4y + 2)(2x + 8y + 5)$

18. $(5x + 1)(2x + 1)(x + 7)$

19. $(4x + 2y + 4)(3x + 2y - 5)$

20. $(3x^2 - 2x - 7)(3x^2 + 6x - 5)$

Answers: Calculus Expanding Practice #3

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

1. $(5x - 9)(2x - 11)(x + 2)$ $= 10x^3 - 53x^2 - 47x + 198$

2. $(3x + 2y - 4)(x + 10y - 6)$ $= 3x^2 - 22x + 20y^2 - 52y + 32xy + 24$

3. $(x + 14)(x - 12)(x + 7)$ $= x^3 + 9x^2 - 154x - 1176$

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

5. $(x + 4)(x - 5)(3x + 5)$ $= 3x^3 + 2x^2 - 65x - 100$

6. $(5x^2 + 3x + 3)(3x^2 - 9x - 1)$ $= 15x^4 - 36x^3 - 23x^2 - 30x - 3$

7. $(7x + 5)(2x - 1)(x + 7)$ $= 14x^3 + 10x^2 + 16x - 35$

8. $(5x + y - 7)(3x - 3y - 5)$ $= 15x^2 - 46x - 3y^2 + 16y - 12xy + 35$

9. $(x^2 + 4x - 7)(x^2 - 4x + 4)$ $= x^4 - 19x^2 + 44x - 28$

10. $(3x - 2y - 6)(x + 9y + 2)$ $= 3x^2 - 18y^2 - 58y + 25xy - 12$

11. $(3x^2 + 2x - 5)(3x^2 - x - 4)$ $= 9x^4 + 3x^3 - 29x^2 - 3x + 20$

12. $(6x + 13)(x - 10)(2x + 3)$ $= 12x^3 - 76x^2 - 40x - 390$

13. $(5x^2 + 3x + 3)(x^2 + 4x - 4)$ $= 5x^4 + 23x^3 - 5x^2 - 12$

14. $(3x - 2y - 2)(4x - 7y - 5)$ $= 12x^2 - 23x + 14y^2 + 24y - 29xy + 10$

15. $(4x - y - 7)(2x + 6y - 2)$ $= 8x^2 - 22x - 6y^2 - 40y + 22xy + 14$

16. $(2x^2 - 2x - 8)(3x^2 - 7x - 5)$ $= 6x^4 - 20x^3 - 20x^2 + 66x + 40$

17. $(x + 4y + 2)(2x + 8y + 5)$ $= 2x^2 + 9x + 32y^2 + 36y + 16xy + 10$

18. $(5x + 1)(2x + 1)(x + 7)$ $= 10x^3 + 77x^2 + 50x + 7$

19. $(4x + 2y + 4)(3x + 2y - 5)$ $= 12x^2 - 8x + 4y^2 - 2y + 14xy - 20$

20. $(3x^2 - 2x - 7)(3x^2 + 6x - 5)$ $= 9x^4 + 12x^3 - 48x^2 - 32x + 35$