Exercise 2.9

Express each of the following in partial fractions.

1. $\dfrac{2x+4}{(x+1)(x+2)}$

2. $\dfrac{x-4}{(x+2)(x-1)}$

3. $\dfrac{3}{x^2-9}$

4. $\dfrac{x}{x^2-1}$

5. $\dfrac{x+1}{x^2-4}$

6. $\dfrac{x+3}{x^2+5x+4}$

7. $\dfrac{4x+10}{(2+x)(3+x)(4+x)}$

8. $\dfrac{4x+2}{(x+2)(x^2-1)}$

9. $\dfrac{x^2-2x+4}{2x(x-3)(x+1)}$

10. $\dfrac{x^2-4}{x(x+1)(x+3)}$

11. $\dfrac{x}{(1+x)^2}$

12. $\dfrac{9}{(x-1)(x+2)^2}$

13. $\dfrac{3x^2+x-2}{(2x-1)(x-2)^2}$

14. $\dfrac{x^2-1}{x^2(2x+1)}$

15. $\dfrac{1}{x^2(x^2-1)}$

16. $\dfrac{x^2+1}{x^2-1}$

17. $\dfrac{x^2+x-1}{(x+1)(x+2)}$

18. $\dfrac{2x^2+3x+2}{x^2+3x+2}$

19. $\dfrac{x^3+x+1}{(x+1)^2}$

20. $\dfrac{x^3+3}{(x+1)(x-1)}$

21. $\dfrac{2x-1}{(x+2)(x^2+1)}$

22. $\dfrac{x+1}{x(x^2+x+1)}$

23. $\dfrac{3x}{(x-1)(x^2+x+1)}$

24. $\dfrac{1}{(x-1)(x^2-x+1)}$

25. $\dfrac{x}{(x+1)(x-1)^3}$

Exercise 2.9

1. $\dfrac{2}{x+1}$

2. $\dfrac{2}{x+2} - \dfrac{1}{x-1}$

3. $\dfrac{1}{2(x-3)} - \dfrac{1}{2(x+3)}$

4. $\dfrac{1}{2(x+1)} + \dfrac{1}{2(x-1)}$

5. $\dfrac{1}{4(x+2)} + \dfrac{3}{4(x-2)}$

6. $\dfrac{1}{3(x+4)} + \dfrac{2}{3(x+1)}$

7. $\dfrac{1}{2+x} + \dfrac{2}{3+x} - \dfrac{3}{4+x}$

8. $-\dfrac{2}{x+2} + \dfrac{1}{x-1} + \dfrac{1}{x+1}$

9. $\dfrac{7}{24(x-3)} + \dfrac{7}{8(x+1)} - \dfrac{2}{3x}$

10. $\dfrac{3}{2(x+1)} + \dfrac{5}{6(x+3)} - \dfrac{4}{3x}$

11. $\dfrac{1}{1+x} - \dfrac{1}{(1+x)^2}$

12. $\dfrac{1}{x-1} - \dfrac{1}{x+2} - \dfrac{3}{(x+2)^2}$

13. $-\dfrac{1}{3(2x-1)} + \dfrac{5}{3(x-2)} + \dfrac{4}{(x-2)^2}$

14. $\dfrac{2}{x} - \dfrac{1}{x^2} - \dfrac{3}{2x+1}$

15. $-\dfrac{1}{x^2} + \dfrac{1}{2(x-1)} - \dfrac{1}{2(x+1)}$

16. $1 + \dfrac{1}{x-1} - \dfrac{1}{x+1}$

17. $1 - \dfrac{1}{x+1} - \dfrac{1}{x+2}$

18. $2 - \dfrac{4}{x+2} + \dfrac{1}{x+1}$

19. $x-2 + \dfrac{4}{x+1} - \dfrac{1}{(x+1)^2}$

20. $x + \dfrac{2}{x-1} - \dfrac{1}{x+1}$

21. $\dfrac{x}{x^2+1} - \dfrac{1}{x+2}$

22. $\dfrac{1}{x} - \dfrac{x}{x^2+x+1}$

23. $\dfrac{1}{x-1} + \dfrac{1-x}{x^2+x+1}$

24. $\dfrac{1}{x-1} - \dfrac{x}{x^2-x+1}$

25. $\dfrac{1}{8(x+1)} - \dfrac{1}{8(x-1)} + \dfrac{1}{4(x-1)^2} + \dfrac{1}{2(x-1)^3}$