

STEWART

5.7

ANTON

8.5

15-16 ■ Write out the form of the partial fraction expansion of the function. Do not determine the numerical values of the coefficients.

15. (a) $\frac{2}{x^2 + 3x - 4}$

(b) $\frac{x^2}{(x-1)(x^2+x+1)}$

16. (a) $\frac{x-1}{x^3+x^2}$

(b) $\frac{x-1}{x^3+x}$

17-24 ■ Evaluate the integral.

17. $\int \frac{x-9}{(x+5)(x-2)} dx$

18. $\int_0^1 \frac{x-1}{x^2+3x+2} dx$

19. $\int_2^3 \frac{1}{x^2-1} dx$

20. $\int \frac{x^2+2x-1}{x^3-x} dx$

21. $\int \frac{10}{(x-1)(x^2+9)} dx$

22. $\int \frac{2x^2+5}{(x^2+1)(x^2+4)} dx$

23. $\int \frac{x^3+x^2+2x+1}{(x^2+1)(x^2+2)} dx$

24. $\int \frac{x^2-x+6}{x^3+3x} dx$

25-28 ■ Use long division to evaluate the integral.

25. $\int \frac{x^2}{x+1} dx$

26. $\int \frac{y}{y+2} dy$

27. $\int_0^1 \frac{x^3}{x^2+1} dx$

28. $\int_0^2 \frac{x^3+x^2-12x+1}{x^2+x-12} dx$

29-30 ■ Make a substitution to express the integrand as a rational function and then evaluate the integral.

29. $\int_9^{16} \frac{\sqrt{x}}{x-4} dx$

30. $\int \frac{1}{x-\sqrt{x+2}} dx$

1-8 Write out the form of the partial fraction decomposition. (Do not find the numerical values of the coefficients.)

1. $\frac{3x-1}{(x-3)(x+4)}$

2. $\frac{5}{x(x^2-4)}$

3. $\frac{2x-3}{x^3-x^2}$

4. $\frac{x^2}{(x+2)^3}$

5. $\frac{1-x^2}{x^3(x^2+2)}$

6. $\frac{3x}{(x-1)(x^2+6)}$

7. $\frac{4x^3-x}{(x^2+5)^2}$

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

9-32 Evaluate the integral.

9. $\int \frac{dx}{x^2-3x-4}$

10. $\int \frac{dx}{x^2-6x-7}$

11. $\int \frac{11x+17}{2x^2+7x-4} dx$

12. $\int \frac{5x-5}{3x^2-8x-3} dx$

13. $\int \frac{2x^2-9x-9}{x^3-9x} dx$

14. $\int \frac{dx}{x(x^2-1)}$

15. $\int \frac{x^2-8}{x+3} dx$

16. $\int \frac{x^2+1}{x-1} dx$

17. $\int \frac{3x^2-10}{x^2-4x+4} dx$

18. $\int \frac{x^2}{x^2-3x+2} dx$

19. $\int \frac{x^5+x^2+2}{x^3-x} dx$

20. $\int \frac{x^5-4x^3+1}{x^3-4x} dx$

21. $\int \frac{2x^2+3}{x(x-1)^2} dx$

22. $\int \frac{3x^2-x+1}{x^3-x^2} dx$

23. $\int \frac{2x^2-10x+4}{(x+1)(x-3)^2} dx$

24. $\int \frac{2x^2-2x-1}{x^3-x^2} dx$

25. $\int \frac{x^2}{(x+1)^3} dx$

26. $\int \frac{2x^2+3x+3}{(x+1)^3} dx$

27. $\int \frac{2x^2-1}{(4x-1)(x^2+1)} dx$

28. $\int \frac{dx}{x^3+2x}$

29. $\int \frac{x^3+3x^2+x+9}{(x^2+1)(x^2+3)} dx$

30. $\int \frac{x^3+x^2+x+2}{(x^2+1)(x^2+2)} dx$

31. $\int \frac{x^3-2x^2+2x-2}{x^2+1} dx$

32. $\int \frac{x^4+6x^3+10x^2+x}{x^2+6x+10} dx$

33-34 Evaluate the integral by making a substitution that converts the integrand to a rational function.

33. $\int \frac{\cos \theta}{\sin^2 \theta + 4 \sin \theta - 5} d\theta$

34. $\int \frac{e^t}{e^{2t}-4} dt$