9.5 PROBLEMS

Find the integrals in Problems 1 through 36.

1. $\int \frac{x^2}{x+1}\,dx$
2. $\int \frac{x^3}{2x-1}\,dx$
3. $\int \frac{1}{x^2-3x}\,dx$
4. $\int \frac{x}{x^2+4x}\,dx$
5. $\int \frac{1}{x^2+x-6}\,dx$
6. $\int \frac{x^3}{x^2+x-6}\,dx$
7. $\int \frac{1}{x^3+4x}\,dx$
8. $\int \frac{1}{(x+1)(x^2+1)}\,dx$
9. $\int \frac{x^4}{x^2+4}\,dx$
10. $\int \frac{1}{(x^2+1)(x^2+4)}\,dx$
11. $\int \frac{x-1}{x+1}\,dx$
12. $\int \frac{2x^3-1}{x^2+1}\,dx$
13. $\int \frac{x^2+2x}{(x+1)^2}\,dx$
14. $\int \frac{2x-4}{x^2-x}\,dx$
15. $\int \frac{1}{x^2-4}\,dx$
16. $\int \frac{x^4}{x^2+4x+4}\,dx$
17. $\int \frac{x+10}{2x^2+5x-3}\,dx$
18. $\int \frac{x+1}{x^3-x^2}\,dx$
19. $\int \frac{x^2+1}{x^3+2x^2+x}\,dx$
20. $\int \frac{x^2+x}{x^3-x^2-2x}\,dx$
21. $\int \frac{4x^3-7x}{x^4-5x^2+4}\,dx$
22. $\int \frac{2x^2+3}{x^4-2x^2+1}\,dx$
23. $\int \frac{x^2}{(x+2)^3}\,dx$
24. $\int \frac{x^2+x}{(x^2-4)(x+4)}\,dx$
25. $\int \frac{1}{x^3+x}\,dx$
26. $\int \frac{6x^3-18x}{(x^2-1)(x^2-4)}\,dx$
27. $\int \frac{x+4}{x^3+4x}\,dx$
28. $\int \frac{4x^4+x+1}{x^5+x^4}\,dx$
29. $\int \frac{x}{(x+1)(x^2+1)}\,dx$
30. $\int \frac{x^2+2}{(x^2+1)^2}\,dx$
31. $\int \frac{x^2-10}{2x^4+9x^2+4}\,dx$
32. $\int \frac{x^2}{x^4-1}\,dx$
33. $\int \frac{x^3+x^2+2x+3}{x^4+5x^2+6}\,dx$
34. $\int \frac{x^2+4}{(x^2+1)^2(x^2+2)}\,dx$
35. $\int \frac{x^4+3x^2-4x+5}{(x-1)^2(x^2+1)}\,dx$
36. $\int \frac{2x^3+5x^2-x+3}{(x^2+x-2)^2}\,dx$

In Problems 37 through 40, make a preliminary substitution before using the method of partial fractions.

37. $\int \frac{e^{4t}}{(e^{2t}-1)^3}\,dt$
38. $\int \frac{\cos\theta}{\sin^2\theta-\sin\theta-6}\,d\theta$
39. $\int \frac{1+\ln t}{t(3+2\ln t)^2}\,dt$
40. $\int \frac{\sec^2 t}{\tan^3 t+\tan^2 t}\,dt$

In Problems 41 through 44, find the area of the region R between the curve and the x-axis over the given interval.

41. $y=\frac{x-9}{x^2-3x}$, $1 \leqq x \leqq 2$
42. $y=\frac{x+5}{3+2x-x^2}$, $0 \leqq x \leqq 2$