Section 7.5 – Integrating Rational Functions by Partial Fractions

Evaluate the integral.

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

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

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

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

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

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

Use a CAS to evaluate the integral in two ways: (i) integrate directly; (ii) Use the CAS to find the partial fraction decomposition and integrate the decomposition. Integrate by hand to check the results.

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