Exercise 9. Integration using partial fractions with linear factors

In Problems 1 to 5, integrate with respect to x

1. $\displaystyle\int \frac{12}{(x^2-9)}\,dx$

2. $\displaystyle\int \frac{4(x-4)}{(x^2-2x-3)}\,dx$

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

4. $\displaystyle\int \frac{x^2+9x+8}{x^2+x-6}\,dx$

5. $\displaystyle\int \frac{3x^3-2x^2-16x+20}{(x-2)(x+2)}\,dx$

Exercise 10. Integration using partial fractions with repeated linear factors

In Problems 1 and 2, integrate with respect to x.

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

2. $\displaystyle\int \frac{5x^2-30x+44}{(x-2)^3}\,dx$

In Problems 3 and 4, evaluate the definite integrals correct to 4 significant figures.

3. $\displaystyle\int_1^2 \frac{x^2+7x+3}{x^2(x+3)}\,dx$

4. $\displaystyle\int_6^7 \frac{18+21x-x^2}{(x-5)(x+2)^2}\,dx$

Exercise 11. Integration using partial fractions with quadratic factors

1. Determine: $\dfrac{x^2-x-13}{(x^2+7)(x-2)}\,dx$

In Problems 2 to 4, evaluate the definite integrals correct to 4 significant figures.

2. $\displaystyle\int_5^6 \frac{6x-5}{(x-4)(x^2+3)}\,dx$

3. $\displaystyle\int_1^2 \frac{4}{(16-x^2)}\,dx$

4. $\displaystyle\int_4^5 \frac{2}{(x^2-9)}\,dx$