

(74) Indefinite Integrals

WORKING AT D/E

(1) Find each, simplifying any coefficients that are fractions:

(a) $\int \sqrt[3]{x^4} dx$

(b) $\int (x-1)(x+2) dx$

(c) $\int \frac{5}{x^3} dx$

(d) $\int 4x^{-7} dx$

(2) Given that

$$\int (4x^3 + px^2 + q) dx = x^4 + 2x^3 + 9x + c$$

where p, q and c are constants, find the values of p and q .

(3) Show that $\int \frac{7}{2t^{\frac{1}{3}}} dt = \frac{21}{4} t^{\frac{2}{3}} + c$

WORKING AT B/C

(1) Show that $\int y - y^{-2} dy = \frac{1}{2}y^2 + \frac{1}{y} + c$

(2) Find $\int \frac{4t^3 - \sqrt{t}}{2t^2} dt$ simplifying the coefficients of each term.

(3) Given $\int (Ax + B)^2 dx = 3x^3 + 6x^2 + 4x + c$ find the positive constants A and B

WORKING AT A*/A

(1) $f(x) = (1 - 3x)^8$

Given that x is small such that terms in x^3 and higher can be ignored:

(a) Show that an approximation for $f(x)$ can be written in the form $f(x) = P + Qx + Rx^2$

(b) Find an approximation for $\int f(x) dx$

(1) Find $\int \left(4 - \frac{\sqrt{t}-1}{t^2}\right) dt$ simplifying the coefficients of each term.