



Integration using Partial Fractions - Edexcel Past Exam Questions

1. (a) Express $\frac{5x+3}{(2x-3)(x+2)}$ in partial fractions. (3)

(b) Hence find the exact value of $\int_2^6 \frac{5x+3}{(2x-3)(x+2)} dx$, giving your answer as a single logarithm. (5)

Jun 05 Q3

2. Express $\frac{2x-1}{(x-1)(2x-3)}$ in partial fractions. (3)

Jan 07 Q4(edited)

3.
$$\frac{2(4x^2+1)}{(2x+1)(2x-1)} \equiv A + \frac{B}{(2x+1)} + \frac{C}{(2x-1)}.$$

(a) Find the values of the constants A , B and C . (4)

(b) Hence show that the exact value of $\int_1^2 \frac{2(4x^2+1)}{(2x+1)(2x-1)} dx$ is $2 + \ln k$, giving the value of the constant k . (6)

June 07 Q4

4. Express $\frac{2}{4-y^2}$ in partial fractions. (3)

June 08 Q7(edited)

5.

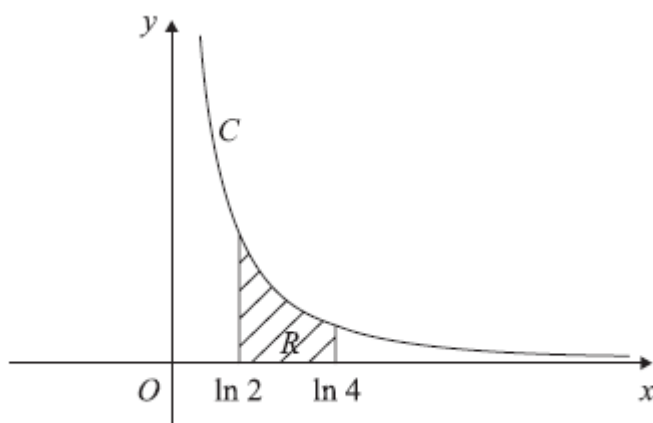


Figure 3

The curve C has parametric equations

$$x = \ln(t + 2), \quad y = \frac{1}{(t + 1)}, \quad t > -1.$$

The finite region R between the curve C and the x -axis, bounded by the lines with equations $x = \ln 2$ and $x = \ln 4$, is shown shaded in Figure 3.

(a) Show that the area of R is given by the integral

$$\int_0^2 \frac{1}{(t + 1)(t + 2)} dt. \quad (4)$$

(b) Hence find an exact value for this area. (6)

(c) Find a cartesian equation of the curve C , in the form $y = f(x)$. (4)

(d) State the domain of values for x for this curve. (1)

Jan 08 Q7

6.

$$f(x) = \frac{4 - 2x}{(2x + 1)(x + 1)(x + 3)} = \frac{A}{(2x + 1)} + \frac{B}{(x + 1)} + \frac{C}{(x + 3)}.$$

(a) Find the values of the constants A , B and C . (4)

(b) (i) Hence find $\int f(x) dx$. (3)

(ii) Find $\int_0^2 f(x) dx$ in the form $\ln k$, where k is a constant. (3)

June 09 Q3



7. (a) Express $\frac{5}{(x-1)(3x+2)}$ in partial fractions. (3)

(b) Hence find $\int \frac{5}{(x-1)(3x+2)} dx$, where $x > 1$. (3)

Jan 11 Q3(edited)
