

C4 Integration

P3 June 2001

6. (a) Find

(i) $\int \cos^2 x \, dx,$

(ii) $\int (x+2)e^{3x} \, dx.$

(b) Use the substitution $u = \ln x$ to evaluate

$$\int_1^{e^2} \frac{1}{x(1+2\ln x)^5} \, dx.$$

[8]

[6]

P3 June 2002

6. (a) Use the substitution $u = 25 - x^2$ to evaluate

$$\int_3^4 \frac{x}{\sqrt{25-x^2}} \, dx.$$

[4]

(b) Evaluate $\int_1^e (x+1) \ln x \, dx.$

[4]

P3 June 2003

7. (a) Find $\int xe^{-x} \, dx.$

(b) Use the substitution $u = 2x - 1$ to evaluate

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

[3]

[6]

P3 June 2004

7. (a) Find $\int (2x+1) \sin x \, dx.$

[4]

(b) Use the substitution $u = 4 - x^2$ to evaluate

$$\int_0^1 \frac{x}{(4-x^2)^2} \, dx.$$

[4]

P4 June 2005

7. (a) Use the substitution $u = 2x - 1$ to evaluate

$$\int_0^1 x(2x-1)^9 \, dx.$$

[5]

(b) (i) Find $\int x \cos 2x \, dx.$

[4]

(ii) Use the result of (b)(i) to find

$$\int x \cos^2 x \, dx.$$

[3]