

分部積分

$$\int u dv = uv - \int v du$$

例1.  $\int x e^x dx = x e^x - e^x + c$

例2.  $\int_0^1 x^2 e^x dx = e - 2$

習作

1.  $\int (x^2 + 2x + 3)e^x dx = (x^2 + 3)e^x + c$

$x$	0	1
$f(x)$	2	4
$f'(x)$	6	-3
$g(x)$	-4	3
$g'(x)$	2	-1

22. The table above gives values of  $f$ ,  $f'$ ,  $g$  and  $g'$  for selected values of  $x$ . If

2.  $\int_0^1 f'(x)g(x)dx = 5$ , then  $\int_0^1 f(x)g'(x)dx =$

15

部分分式

例1. 求  $\int \frac{x+3}{(x+1)(x-2)} dx = -\frac{2}{3} \ln|x+1| + \frac{5}{3} \ln|x-2| + c$

例2.  $\int \frac{2x^2+3x+1}{(x-1)^3} dx = 2 \ln|x-1| - \frac{7}{x-1} - \frac{3}{(x-1)^2} + c$