

## Sorting cards created with Tarsia

Tarsia formulator is free software which can be downloaded from

<http://www.mmlsoft.com/index.php/home/free-software>

### Instructions

Split the cards into 2 piles – those which need integration by parts and those which require a substitution. You may find some where either can be used.

### Extension

For each substitution, what substitution will be useful?

For those using parts, which will be  $u$  and which  $dv/dx$ ?

Complete the integrations

$\int x^2(2x^3 + 3)^5 dx$	$\int x \ln x \, dx$
$\int 2x (x + 2)^5 dx$	$\int \ln x dx$
$\int x \sqrt{(3x - 2)} \, dx$	$\int x^2 \cos x \, dx$
$\int_0^5 \frac{x}{\sqrt{x+4}} dx$	$\int x e^{-x} dx$
$\int x \sin x^2 dx$	$\int x \sin x dx$
$\int x^2 e^{x^3} dx$	$\int x^2 e^{3x} dx$
$\int \frac{\sin x}{\cos^2 x} dx$	$\int_0^{\pi/4} 2x \cos 2x \, dx$
$\int \frac{2x}{\cos^2(x^2 + 3)} dx$	$\int (x + 1) \ln x dx$
$\int \frac{1 + \cos x}{\sin x + x} dx$	$\int e^x \cos x dx$