

### Mathematica (3)

Mathematica can be used to find symbolic integrals. To integrate the function  $x^2 \sin[x]$  we use the built in function `Integrate[]` where the first argument is the function to be integrated and the second is the variable of integration. We can also integrate the function  $x \log[x]$  where `Log[x]` is the natural log of  $x$ .

```
In[3]:= Integrate[x^2 Sin[x], x]
```

```
Out[3]= -(-2 + x^2) Cos[x] + 2 x Sin[x]
```

```
In[4]:= Integrate[x Log[x], x]
```

```
Out[4]= - $\frac{x^2}{4}$  +  $\frac{1}{2} x^2 \text{Log}[x]$ 
```

Mathematica can also numerically integrate functions. In the example below, we numerically integrate the function  $\text{Exp}[-x^2]$  (which has no closed form symbolic integral) between 0 and 5.

```
In[5]:= NIntegrate[Exp[-x^2], {x, 0, 5}]
```

```
Out[5]= 0.886227
```