

Calculus II, Section 7.6, #26
Integration Using Tables and Computer Algebra Systems

Use the Table of Integrals in your textbook to evaluate the integral.¹

$$\int_0^1 x^4 e^{-x} dx$$

As we write this, it is January 26, 2016. Nobody uses tables to integrate any longer. We'll use Wolfram|Alpha (W|A).

Using Mathematica format, the input is

```
Integrate[x^4*e^(-x),{x,0,1}]
```

and we get

$$\int_0^1 \frac{x^4}{e^x} dx = 24 - \frac{65}{e} \approx 0.087836$$

Computed by Wolfram|Alpha

Thus,

$$\begin{aligned} \int_0^1 x^4 e^{-x} dx &= 24 - \frac{65}{e} \\ &= \frac{24e - 65}{e} \end{aligned}$$

¹Stewart, *Calculus, Early Transcendentals*, p. 513, #20.