

## Opgave 9.5.39

Although it is often true that a double integral can be evaluated by using either  $dx$  or  $dy$  first, sometimes one choice over the other makes the work easier. Evaluate the double integrals in the easiest way possible

$$\iint_R x e^{xy} \, dx \, dy; \quad 0 \leq x \leq 2, \quad 0 \leq y \leq 1$$

— s. 559

Opstil

$$\int_0^1 \int_0^2 x e^{xy} \, dx \, dy$$

Brug Fubini's sætning til at vende det om

$$\int_0^2 \int_0^1 x e^{xy} \, dy \, dx$$

$$\int_0^2 x \left[ \frac{1}{x} e^{xy} \right]_0^1 \, dx$$

$$\int_0^2 [e^{xy}]_0^1 \, dx$$

$$\int_0^2 e^x - 1 \, dx$$

$$[e^x - x]_0^2$$

$$(e^2 - 2) - (e^0 - 0)$$

$$e^2 - 2 - 1$$

$$e^2 - 3$$