Calc 3 questions undertext

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Chapter 1

testing

1.1 questions

Oppgave

Evaluate the double integral

$$\iint_R x^2 y \, dA.$$

where R is the region bounded by $y = x^2$ and $y = 2x$.

Solution: First, find the intersection points of $y = x^2$ and $y = 2x$:

$$x^2 = 2x \implies x^2 - 2x = 0 \implies x(x-2) = 0.$$

so $x = 0$ and $x = 2$. The region R is described by $x^2 \leqslant 2x$ for $0 \leqslant x \leqslant 2$.
set up the integral:

$$\iint_R x^2 y \, dA = \int_0^2 \int_{x^2}^{2x} x^2 y \, dy \, dx.$$