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Tugas Praktikum 7 PMK

1) dik: $\iint_R 6xy^2\,dA$

$R = [2,4] \times [1,2]$

Jawab: $\int_1^2 \int_2^4 6xy^2\,dx\,dy$

$= \int_1^2 \left[\frac{6}{2} x^2 y^2 \right]_2^4 dy$

$= \int_1^2 48y^2 - 12y^2\,dy$

$= \int_1^2 36y^2\,dy$

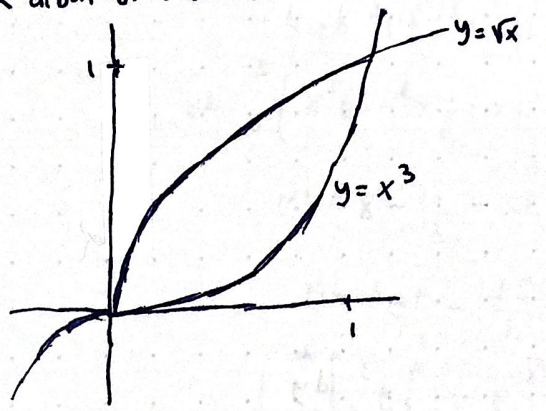
$= \left[\frac{36}{3} y^3 \right]_1^2$

$= 96 - 12$

$= 84$ //

2) dik: $\iint_R (4xy - y^3)\,dA$

R dibatasi oleh $y = \sqrt{x}$ dan $y = x^3$



$\Rightarrow$ batas x $\rightarrow$ $0 \le x \le 1$

batas y $\rightarrow$ $x^3 \le y \le \sqrt{x}$

$\Rightarrow \int_0^1 \int_{x^3}^{\sqrt{x}} 4xy - y^3\,dy\,dx$

$= \int_0^1 \left[\frac{4}{2} x y^2 - \frac{1}{4} y^4 \right]_{x^3}^{\sqrt{x}} dx$

$= \int_0^1 2x^2 - \frac{1}{4}x^2 - \left(2x^7 - \frac{1}{4} x^{12} \right) dx$

$= \int_0^1 \frac{1}{4}x^{12} - 2x^7 + \frac{7}{4}x^2\,dx$

$= \left[\frac{1}{52} x^{13} - \frac{2}{8} x^8 + \frac{7}{12} x^3 \right]_0^1$

$= \frac{1}{52} - \frac{2}{8} + \frac{7}{12}$

$= 0.352564103$

$= 0.35$ //