SOLUTION KEY

Section: 34

Name & Surname: _____

Math 120 Spring 2017-2018
Quiz no.: 04
Date: 26.04.18
Time Limit: ~15 Minutes

ID Number: _____

Grade:

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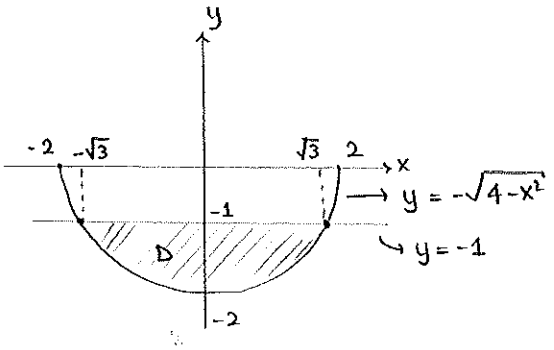
1. **Express** the double integral $\iint_{\mathcal{D}} f(x,y)\mathrm{d}A$ as iterated integrals in both orders $\mathrm{d}x\mathrm{d}y$ and $\mathrm{d}y\mathrm{d}x$, where $\mathcal{D}$ is the semicircular region bounded by the line $y=-1$ and the curve $y=-\sqrt{4-x^2}$.

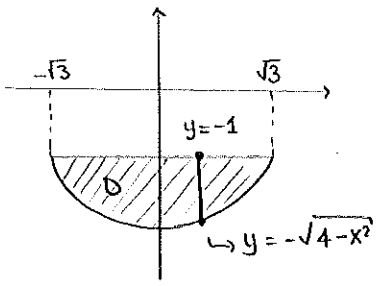


$y=-\sqrt{4-x^2} \Rightarrow x^2+y^2=2^2$ (lower half part)

Intersection points:

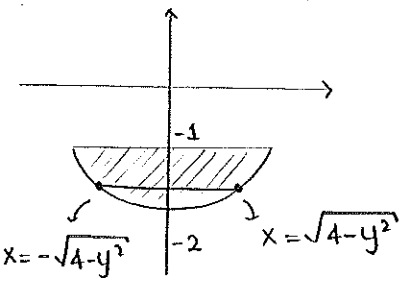
$\left.\begin{matrix} y=-1 \\ y=-\sqrt{4-x^2} \end{matrix}\right\} -1=-\sqrt{4-x^2} \Rightarrow x=\pm\sqrt{3}$

In the order $dydx$:



$$\iint_D f(x,y)\,dA = \int_{-\sqrt{3}}^{\sqrt{3}} \int_{-\sqrt{4-x^2}}^{-1} f(x,y)\,dy\,dx$$

In the order $dxdy$:



$$\iint_D f(x,y) = \int_{-2}^{-1} \int_{-\sqrt{4-y^2}}^{\sqrt{4-y^2}} f(x,y)\,dx\,dy$$