

Week: May 3 – May 9, 2021

Topic: **Surface integral**

The below provided instructions should guide you through studying the topic. For additional explanation, clarification and extra material contact the Lecture/Tutorial teacher by email or the MS-Teams platform for live online consultation (see webpage for the link).

https://mat.nipax.cz/mathematics:mathematics_ii

This week we are entering the last big chapter of this semester. We will deal with surface integrals over parametrically defined surfaces. As for line integral, also the surface integral is defined in two kinds. We will start with the surface integral of scalar functions. This will be used in the second lecture for introduction of surface integral of vector functions. Some extra applications and additional theorems we will keep for the next week.

1) Read and learn the explanation from the textbook. Scanned pages can be found on the web page.

https://mat.nipax.cz/media/mathematics:pages_84-103.pdf

Some of this material is for this week some for the next one.

Additional material and alternative explanation with many figures and exercises can be found in (free) online available textbooks

<http://www.math.wisc.edu/~keisler/calc.html>

namely chapter 13 http://www.math.wisc.edu/~keisler/chapter_13.pdf

<https://openstax.org/books/calculus-volume-3/pages/1-introduction>

namely chapter 6.5 - 6.8 <https://openstax.org/books/calculus-volume-3/pages/6-introduction>

<https://openstax.org/books/calculus-volume-3/pages/6-6-surface-integrals>

2) Take a look at the solved exercises from our collection of examples

questions: https://mat.nipax.cz/media/surface_integral.pdf

complete solutions (in Czech): <https://mat.nipax.cz/media/19plosny-skalar.pdf>

https://mat.nipax.cz/media/plosny_integral_vektor_pole.pdf

3) As a training solve (at least) the following exercises.

607, 608, 610 – surface integral of a scalar function

662, 665, 668 – surface integral of a vector function

4) As a long term homework, to be delivered at specified deadline, solve all the corresponding exercises from sample exams from our webpage

https://mat.nipax.cz/media/mathematics:ma2_exam_1n_en.pdf

https://mat.nipax.cz/media/mathematics:ma2_exam_2n_en.pdf

https://mat.nipax.cz/media/mathematics:ma2_exam_3n_en.pdf

The delivery of all sample exams, completely and correctly solved (by yourself) is necessary (but not sufficient) condition for obtaining the assessment from tutorials.