%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%% Key notions from Mathematics I
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% supremum of a set
% infimum of a set
% limit (finite or infinite) of a sequence
% limit (finite or infinite) of a function at a point (including one-sided limits and limits in $\pm\infty$)
% continuity of a function (at a point, one-sided continuity, continuity on an interval)
% derivative of a function
% convex and concave function
%%
%%
%

%%%
%%%%%%%%% Key notions from Mathematics II %%%%%
%%
interior point of a set
boundary point of a set
open set
closed set
partial derivative
compact set
C^1 function
continuity of a function on a set
convex set
concave function
invertible matrix
inverse of a matrix
sum of an infinite series
convergent series
absolutely convergent series
Riemann integral
antiderivative
%%
%%%% 17 key notions from Mathematics II %%%%%%%%%%%%%%%%%
%%%
%%%

%%%%%%%%%%% DEFINITIONS %%%%%%%%%%%%%%%%%%%%
%%%
%%%% The numbers after the '%' sign are numbers %%%
%%%% of the respective sections in the lecture notes %%%
%%
%%%%%%%%%% Chapter 4
distance of two points in $\mathbf{R}^n$ % 4.1 beginning
open ball
interior point of a set
open set

interior of a set
convergence of a sequence in $\mathbf{R}^n$
boundary point of a set
boundary of a set
closure of a set
closed set % 4.1 end
partial derivative % 4.2 beginning
local maximum of a function with respect to a set
local minimum of a function with respect to a set
local maximum
maximum of a function on a set
minimum of a function on a set % 4.2 end
continuity of a function of n variables at a point % 4.3 beginning
limit of a function of n variables at a point
continuity of a function of n variables with respect to a set at a point
continuity of a function of n variables on a set % 4.3 end
bounded set in $\mathbf{R}^n$ % 4.4
compact set % 4.4
C^1 function % 4.5 beginning
tangent hyperplane
gradient of a function
second order partial derivatives
C^∞ function % 4.5 end
convex set % 4.8 beginning
concave function of n variables
strictly concave function of n variables % 4.8 end
strictly quasiconcave function % 4.9
quasiconcave function % 4.9
%%% 32 definitions from Chapter 4 %%%

%%%%%%%% Chaper 5
m-by-n matrix % 5.1 beginning
sum of two matrices
matrix multiplication
identity matrix
transpose of a matrix % 5.1 end
invertible matrix % 5.2 beginning
inverse of a matrix %
linear combination %
linearly dependent vectors
linearly independent vectors
rank of a matrix
row echelon matrix
elementary row transformations
transformation of a matrix % 5.2 end
determinant of a matrix % 5.3
upper triangular matrix % 5.3
matrix of a linear system % 5.4
augmented matrix of a linear system % 5.4

linear mapping % 5.5
representing matrix % 5.5
%%%% 21 definitions from Chapter 5

%%%%%%%% Chapter 6
partition of an interval % 6.1 beginning
upper Riemann integral
lower Riemann integral
Riemann integral % 6.1 end
antiderivative % 6.2
rational function % 6.3
generalized Riemann integral % 6.4
%%% 7 definitions from Chapter 6

%%%%%%%% Chapter 7
convergent series % 7.1 beginning
partial sum of a series
sum of an infinite series
divergent series % 7.1 end
absolutely convergent series % 7.2
nonabsolutely convergent series % 7.2
%%% 6 definitopns from chapter 7

%%
%%%%%%%% Theorems to state
%%%
%%%% The number after the '%' sign are the numbers %%
%%%% of the respective theorems in the lecture notes. %%
%%

%%% Chapter 4
properties of open sets % 4.2
on convergence of sequences in $\mathbf{R}^n$ % 4.3
characterization of closed sets % 4.4
properties of closed sets % 4.5
necessary condition for existence of a local extremum % 4.6
Heine theorem for continuity with respect to a set % 4.7
characterization of compact sets in $\mathbf{R}^n$ % 4.10
on attaining of extrema % 4.11
weak Lagrange theorem % 4.13
on the tangent hyperplane % 4.15
on differentiation of a composed function % 4.16
on commutability of partial derivatives % 4.17
implicite function theorem % 4.18
Lagrange multiplier theorem % 4.20 and 4.21
on concavity and continuity % 4.22
on level sets of concave functions % 4.23
characterization of C^1 concave functions % 4.24
on extremum of a concave function % 4.25

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charakterization of C^1 strictly concave functions % 4.26
on uniqueness of extremum % 4.28
on quasiconcave functions and level sets % 4.27
%%%%%%%%% 21 theorems from Chapter 4

% Chapter 5
properties of matrix multiplication % 5.2
transpose of a matrix – properties % 5.3
invertibility and matrix operations % 5.4
properties of transformation % 5.5
multiplication and transformation % 5.6
on invertibility and rank % 5.8
on determinant of a triangular matrix % 5.9
on determinant and elementary row transformation % 5.11 and 5.12
determinant and invertibility % 5.13
determinant of a product % 5.14
determinant of a transpose % 5.15
on linear systems with square matrix %5.17
on solvability of a linear system %5.19
Cramer's rule %5.18
on representation of linear mappings %5.20
on linear mappings from $\mathbf{R}^n$ into $\mathbf{R}^n$ %5.22
on composition of linear mappings % 5.21
%%% 17 theorems from Chapter 5

%%% Chapter 6
characterization of Riemann integrability % 6.1(v)
Riemann integral as interval function % 6.2
linearity of Riemann integral % 6.3
monotonicity of Riemann integral % 6.4
on existence of Riemanna integral % 6.5
on differentiating indefinite integral % 6.6
on existence of an antiderivative % 6.9
on substitution for antiderivatives % 6.11
integration by parts for antiderivatives % 6.12
Newton-Leibniz formula for generalized Riemann integral % 6.14
on substitution for definite integral % 6.15
integration by parts for definite integral % 6.16
%%%% 12 theorems from Chapter 6

%%% Chapter 7
necessary condition for convergence of a series % 7.1
comparison test % 7.2
on convergence and absolute convergence % 7.3
limit comparison test % 7.4
Cauchy root test % 7.5
d'Alembert ratio test % 7.6
on convergence of $\sum 1/n^\alpha$ % 7.7
Leibniz test % 7.8
%%%% 8 theorems from Chapter 7