

It would be better to use “verbatim” instead of the font type “tt”, used below.

```
Every document starts with documentclass[12pt]{article}  
begindocument
```

BOLD FACE **LARGE** SMALL CAPITALS

1 point, comma, semicolon

”;” is a semicolon

” ” is called a “inverted comma” (if used like this)

” ’ is called an apostrophe, like “John’s book”

2 VOCABULARY

ENGLISH	DEUTSCH
English expression	deutscher Ausdruck
vocabulary	Vokabel
it is a pity	es ist schade

3 Important differences

1. Number system: decimal point instead of ”Komma”
2. the writing of the integers one ”1” and ”7”
3. in English there is no ”milliarde” (billion !)

Distinguish between the following expression:

ENGLISH	DEUTSCH (Bedeutung)
between (the lines)	zwischen (den Zeilen)
among (distributed among the family members)	zwischen (den Familienmitgliedern aufgeteilt)
mediocre	mittelmäßig
intermediate (solution)	Zwischenlösung
terminate	beenden (gewaltsam)
solution	Lösung
equation	Gleichung
overdetermined	überbestimmt
undetermined	unterbestimmt
uniqueness	Eindeutigkeit
prove/proof	beweisen/Beweis

4 Phrases and arguments

- I am sorry that I could not come on time
- Aren't you sure that you put this into your pocket?
- For sure, this will never happen!
- I assure you, that I will do my homework
- Make sure, that you bring your book
- The statement: "the probability of this event is zero" does *not* mean the same as saying: "this will never happen"!
- to give a proof is the same as giving a guarantee that nothing will happen as long as the assumptions are satisfied;
- to be in that state
- probability experiment: throwing the dice
- probability density (e.g. normal distribution)
- let (X_n) be an i.i.d. sequence of random variables (independent, identically distributed)
- this was the main assumption for the central limit theorem
- the sequence (a_n) tends to the limit a in the topology
- he was looking out for a safe haven
- once you have finished you should save your file
- we prove the lemma,... now the proof is finished;
- is it secure/safe to walk in town at night
- please proceed to the security check
- may I ascertain you that it was never meant to hurt you
- under certain circumstances you cannot avoid ...

- Is there anybody interested in my course?
- Everybody was happy about the victory of the team.
- Anyone in this plane has to sign the custom form before entering the US
- there is no exception, each and every person has to do that
- It is more appropriate ..
- I claim that this is correct
- you may claim your ticket at the counter over there
- I need/must/will not do this
- you must [not enter] this room
- it is certainly true that
- the absolute value of a non-zero complex number is strictly positive
- the absolute value of x ; absolute x is less or equal than absolute y is typed as:

$$|x| \leq |y|$$

- the norm of a matrix, written as $\|A\|$, is defined by the expression

$$\|A\| = \sup\{\|Ax\|, \|x\| \leq 1\},$$

i.e. as the norm of the image of the unit ball under the mapping $x \mapsto Ax$.

- there is no point in doing this ..
- it does not make sense to try this now
- this requires a detailed analysis of ..
- it is evident that we cannot use
- it is clear/trivial that this number is non-negative, but we have to show that it is strictly positive;

- precise explanations are required
- at this level it is not useful anymore to
- once this has been proved we can proceed to
- he had a hard time recently
- it is not difficult/hard to prove
- it is a difficult theorem
- there is hardly any way to reach this place by public transportation
- NOT: hardly we had ...
- we had just reached his home when the thunderstorm began
- up to trivial modifications we may assume that
- without loss of generality we may assume that x is non-zero
- we must not allow the expression in the denominator to be zero
- if and only if (sometimes spelled as “iff”)
- a necessary and sufficient condition for f to be surjective is that
- f is surjective if and only if it is onto the range space.
- the domain of the differential operator is a dense subspace of the Hilbert space $L^2(R)$ (all two of the real line)
- for reasons of symmetry we need not discuss all the four possible cases individually (or separately, one-by-one)
- the result of these two calculations are the same up to a phase factor (resp. they have the same absolute value)
- we now recall that (... call back into our memory)
- may I remind you of your promises
- you may not remember that we met already 7 years ago ...

- don't forget to bring your laptop
- this decision will determine your life ...
- in practice such cases never occur ...
- theory and practice
- you should practice this list of phrases at home
- Because their most frequent use is in the calculation of
- because, since, ... actually
- despite its widespread use this is not a correct formulation
- although he could not come he wishes us all the best
- despite heavy rain the event took place
- Let m denote the number ... required for the ...
- it is of little help for me to know that others ...
- Our problem is to estimate
- the function takes only non-negative values
- the index runs from 1 to n ... (not "goes")
- A recipe starts with the phrase: Take....
- Assume therefore that we know the ratio of ..
- may I take you home
- UPS (DHL,...) could not deliver the book
- B? the function returns values in R^k
- input, output,
- although he is a bright guy he did not deliver according to our hopes
- Minimizing the term $X + Y^2$ subject to the condition $X = Z$ on M

- this quantity is to be minimized over
 - the scandal terminated this career
 - we will finish the proof by showing that ...
 - Finally, estimates of this kind can be used to
 - May I take the liberty of asking you a favor?
 - Feel free to reject the proposal
 - if you think it is better to do it the other way please let me know
 - applying the theory of ... we come to the following conclusion
1. first
 2. second
 3. third item

5 Mathematical Topics

- .
- .
- pure and applied mathematics
- there many applications of this theorem
- the fundamental theorem of algebra
- I am going to explain this from first principles
- lemma, corollary, remark, comment, example
- contradiction, indirect proof,
- I would like to show you an indirect proof

- Assume that the converse of B is true; we are going to show that this implies the converse of A ...
- let us prove the binomial law/theorem by induction
- the proof proceeds through induction by n
- tautology, implication,
- “Ansatz” is worthwhile to be mention
- eigenvalues, eigenvectors,
- and, or, nor,
- diagram chasing, commutative diagram, category theory
- logical expression
- we approach this problem following the scheme developed by Stone and his coauthors
- approach is not the same as approximation
- the asymptotic behaviour of x at infinity
- Landau’s symbol “big Oh”
- partial sum, partial integration
- infinite recursion (INfinite), but finite (“feinite”)
- sum, product
- $\sin = \text{”sein”}$, $\cos = \text{”cosein”}$
- arccos : inverse cosine, MATLAB: acos, asin
- Euclidean space, vector space, subspace
- group, field (algebraic number field), ring, module
- semi-group, lattice (= Gitter oder Verband)
- Boolean algebra, polynomial, roots

- factorization (MATLAB: "zeros(coef)")
- logarithm, exponential function
- area, volume
- curve, surface, e.g. plane surface
- differentiable manifold, parametric representation
- plane, hyperplane, linear or affine subspace
- dimension, codimension
- affine mapping, " $ax + b$ "
- section, intersection, ?Durchdringung
- smooth function, order of smoothness
- $n!$: n factorial (not faculty club)
- continuous functions
- continuously differentiable
- singularity, discontinuity at x_0
- jump discontinuity
- extreme values, local maxima, turning point
- curvature, slope of the tangent
- the tangent to the the curve $y = f(x)$ at x_0
- ? Scheitel
-

6 EMOTIONALS

- I am happy, glad
- I feel sad, unhappy, sorry about . . .
- no milk today, the company is gay
- may I have your attention
- could you reach me the butter/sugar
- many thanks for your help
- thank's a lot for helping me out with a cup of milk
- he was frustrated about the slow progress of your work
-

7 some, any, the

- Is there *any* sugar in this cake? Yes, there is some sugar in the cake, but only little.
- We have seen *some* nice houses, but not a single castle.
- I could not meet any of them in the opera.
- a function f is *uniformly* continuous on a metric space X (note just X) if for every $\varepsilon > 0$ there exists some $\delta > 0$ such that for any pair of arguments (x, y) with $d(x, y) < \delta$ one has (it follows that)

$$d(f(x), f(y)) < \varepsilon.$$

- $\Delta, \iff, \otimes, \forall, \exists, \geq, \leq, x \mapsto f(x),$

$$\int_{-\infty}^y f(x)dx < \infty$$

8 Pitfalls (pigeon English)

- For what is this good?
- From where are you? (correct?)
- Please take place! (correct: have a seat, but the event takes place in this town);
- May I remember you that (remind, recall, remember)?
- I realized this project ... (OK: I did not realize in which situation I am; when I realized what was going to happen I ran away,)
- I simply can not with him

9 ACRONYMS

- IBM = International Business Machines
- FBI = Federal bureau of investigations
- CV = Curriculum Vitae
- DVI = device independent (output)
- PDF = portable document file
- PS = Post Script

10 GENERAL AREAS of INTEREST

- geography, politics (where are you from?)
- school and university system
- family and friends
- food, shopping
- transportation, asking

- housing, renting
- vacations, sports
- music, theater, concert, movie
- emergency, medical, fire
- time (what is the time?)
- measure units (gallons, inch)