



18.02 | Spring 2006 | Undergraduate

# Multivariable Calculus

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More Info

## Readings

### 18.02 Supplementary Notes and Problems

These notes and exercises were written by Prof. Arthur Mattuck and are designed to supplement the textbook.

#### Part I: Notes

SECTIONS	TOPICS
D	Determinants ( <a href="#">PDF</a> )
M	Matrices and Linear Algebra ( <a href="#">PDF</a> )
K	Kepler’s Second Law ( <a href="#">PDF</a> )
TA	The Tangent Approximation ( <a href="#">PDF</a> )
SD	Second Derivative Test ( <a href="#">PDF</a> )
LS	Least Squares Interpolation ( <a href="#">PDF</a> )
N	Non-independent Variables ( <a href="#">PDF</a> )
P	Partial Differential Equations ( <a href="#">PDF</a> )
I	Limits in Iterated Integrals ( <a href="#">PDF</a> )
CV	Changing Variables in Multiple Integrals ( <a href="#">PDF</a> )
G	Gravitational Attraction ( <a href="#">PDF</a> )

#### Part II: Vector Integral Calculus

SECTIONS	TOPICS
V1	Plane Vector Fields ( <a href="#">PDF</a> )
V2	Gradient Fields and Exact Differentials ( <a href="#">PDF</a> )
V3	Two-dimensional Flux ( <a href="#">PDF</a> )
V4	Green’s Theorem in Normal Form ( <a href="#">PDF</a> )
V5	Simply-connected Regions ( <a href="#">PDF</a> )
V6	Multiply-connected Regions; Topology ( <a href="#">PDF</a> )
V7	Laplace's Equation and Harmonic Functions ( <a href="#">PDF</a> )
V8	Vector Fields in Space ( <a href="#">PDF</a> )
V9	Surface Integrals ( <a href="#">PDF</a> )
V10	The Divergence Theorem ( <a href="#">PDF</a> )
V11	Line Integrals in Space ( <a href="#">PDF</a> )
V12	Gradient Fields in Space ( <a href="#">PDF</a> )
V13	Stokes’ Theorem ( <a href="#">PDF</a> )
V14	Some Topological Questions ( <a href="#">PDF</a> )
V15	Relation to Physics ( <a href="#">PDF</a> )

#### Part III: Exercises

Feedback

SECTIONS

Problems\*

- 1
- Vectors and Matrices ([PDF](#))
- 2
- Partial Differentiation ([PDF](#))
- 3
- Double Integrals ([PDF](#))
- 4
- Line Integrals in the Plane ([PDF](#))
- 5
- Triple Integrals ([PDF](#))
- 6
- Vector Integral Calculus in Space ([PDF](#))

Solutions

- 1
- Vectors and Matrices ([PDF](#))
- 2
- Partial Differentiation ([PDF](#))
- 3
- Double Integrals ([PDF](#))
- 4
- Line Integrals in the Plane ([PDF](#))
- 5
- Triple Integrals ([PDF](#))
- 6
- Vector Integral Calculus in Space ([PDF](#))

\* Problems with \* are not solved



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TOPICS