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 (PDF)
M	Matrices and Linear Algebra (PDF)
K	Kepler's Second Law (PDF)
TA	The Tangent Approximation (PDF)
SD	Second Derivative Test (PDF)
LS	Least Squares Interpolation (PDF)
N	Non-independent Variables (PDF)
P	Partial Differential Equations (PDF)
I	Limits in Iterated Integrals (PDF)
CV	Changing Variables in Multiple Integrals (PDF)
G	Gravitational Attraction (PDF)

Part II: Vector Integral Calculus

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

Part III: Exercises

SECTIONS	TOPICS
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