18.024 UNIT IV: DIFFERENTIATION OF FUNCTIONS OF SEVERAL VARIABLES

Tuesday, March 13.

Lecture: Scalar and vector fields.

Read: Vol. II, 8.1–8.8 (we're done with Vol. I for now).

Do: 8.5: 1abcdef, 6, 7, 8; 8.9: 5, 6, 7, 8, 11, 16, 19.

Thursday, March 15.

Lecture: Total derivative, gradient.

Read: 8.10–8.13.

Do: 8.14: 1abc, 2, 3, 4, 7abcd, 8, 11abcd.

Hand in Friday, March 16 in lecture (7 points/problem).

1. B.64; 4.
2. B.64: 6.
3. B.64: 7.

Friday, March 16.

Lecture: Tangent plane, extreme values.

Read: 8.15, 8.16, 9.9.

Do: 8.17: 1, 3ac, 4, 6, 9; C.19: 1, 2, 3; 9.13: 21, 22.

Tuesday, March 20.

Lecture: Chain rule.

Read: C.1–C.13 (skip Theorem 4), Examples 2 and 3, p. 274.

Do: 8.22: 2, 3ab, 5 ($\partial^2\phi/\partial r\partial\theta$ only), 8, 9a, 14ac, 15ac.

Thursday, March 22.

Lecture: Implicit differentiation.

Read: C.14–C.19, 9.6, Examples 1, 2, 3, 6 of 9.7.

Date: Spring 2001.

Do: 9.8: 1, 2, 3, 4a, 5, 6, 8, 9, 11; C.21: 7, 8.

Hand in Friday, March 23 in lecture (7 points/problem).

1. C.20: 4.
2. C.20: 5.
3. C.20: 6.

Friday, March 23.

Lecture: Extreme values, mixed partials.

Read: pp. 277-279, C.22–C.27.

Do: 9.13: 1, 2, 3, 4.

Note that the next quiz will be approximately on Thursday, April 5.