18.024 UNIT V: LINE INTEGRALS

Tuesday, April 3.

Lecture: Line integrals.

Read: 10.1–10.7.

Do: 10.5: 3, 7, 8, 9, 12b (parametrize by polar angle); 10.9: 2, 7, 10.

Thursday, April 5: QUIZ 2 on Units III and IV.

Friday, April 6.

Lecture: The integral of a gradient.

Read: 10.8–10.12. (Skip Theorem 10.2 — we did it last term.)

Do: 10.9: 11a, 15 ($\overline{x}$ only); 10.13: 1, 9, 10 (in 9, show there is a function such that the gradient of $g(\vec{r})$ equals $\vec{F}$).

Tuesday, April 10.

Lecture: The gradient of an integral.

Read: 10.14–10.16.

Do: 10.13: 2, 3, 4, 5, 6.

Thursday, April 12.

Lecture: Construction of potential functions.

Read: 10.17, 10.21.

Do: 10.18: 2, 4, 6, 10, 12, 15.

Hand in Friday, April 13 in lecture (7 points/problem).

1. C.34: 1.
2. C.34: 2.
3. Evaluate $\int_C \vec{f} \cdot d\vec{\alpha}$ if $\vec{f} = \vec{\nabla}(x^2y + 3xy^3)$ and α is the curve $\alpha(t) = (t^2 - 2, 2/t)$ for $1 \le t \le 2$.

Date: Spring 2001.