

Homework 10, due MONDAY 4/3

1. p. 427, problems 2 (a), 3, 4(a)
2. Read the supplement to Section 7.1 on p. 425–427.
3. p. 293, problems 1,3,7
4. p. 447, problems 2 (b), (d), 2 (a), (c), (d), (3)
5. Let $\mathbf{F}(x, y) = \nabla(e^{xy} + x^5 \sin(y^4 \cdot \pi))$. Let $\mathbf{c}(t) = (t^3, 1 - t^2), t \in [0, 1]$. Find $\int_{\mathbf{c}(t)} \mathbf{F} \, ds$.
6. Let $\mathbf{F}(x, y) = (xy, x + y)$. Let $\mathbf{c}(t) = (t, 0), t \in [0, 2]$ and $\mathbf{d}(t) = (t, 1 - (t - 1)^2), t \in [0, 2]$. Compute the line integrals $\int_{\mathbf{c}} \mathbf{F} \cdot ds$ and $\int_{\mathbf{d}} \mathbf{F} \cdot ds$. Compare the results and explain why \mathbf{F} is not ∇f for some function f .