

Classical Mechanics, Phys105A, Wim van Dam, UC Santa Barbara
Exercises Week 4; due Monday February 12, 11:30 am

Question 1 (Sliding down a sphere, 8 points).

- ▷ (a) Taylor, Problem 4.8

Question 2 (Calculations with gradients, 3+3+3+3 points).

- ▷ (a) Taylor, Problem 4.12a
- ▷ (b) Taylor, Problem 4.12b
- ▷ (c) Taylor, Problem 4.12c
- ▷ (d) Taylor, Problem 4.12d

Write the answers to the questions below on a separate set of pages.

Question 3 (More calculations with gradients, 5 points).

- ▷ (a) Taylor, Problem 4.14

Question 4 (Deriving a force, 5 points).

- ▷ (a) Taylor, Problem 4.16

Question 5 (Conservativeness of Coulomb force, 5 points).

- ▷ (a) Taylor, Problem 4.22

Question 6 (Stokes' Theorem, 5+5+15 points).

- ▷ (a) Taylor, Problem 4.25a
- ▷ (b) Taylor, Problem 4.25b
- ▷ (c) Taylor, Problem 4.25c