

Review problems for the final exam and problems on the material of the last week

Material up to midterm 2

1. Section 2: p. 174, problems 7 (b), (d), 8 (b), 17, 21
2. Section 3: p. 255, problems 2 (b), (c), 5, 9, 11
3. Section 5: p. 365, problems 1, 5, 26
4. Section 6: p. 417, problems 5, 6, 20 (only find the x -coordinate of the center of mass), 23, 25

Integrals over curves and surfaces

1. p. 514, problems 1 (a), 3 (b), 8, 11, 12 (a)
2. p. 515, problems 17, 18, 19
3. p. 516, problems 21, 23, 26

Integration theorems

1. Write down (without looking at your notes!) Green's theorem, Stokes' theorem and Gauss' theorem.
2. What is the common theme of the above theorems?
3. Why do you think are these theorems useful?

For the following problems write down Green's theorem, Stokes' theorem and Gauss' theorem (and I very much recommend that you do the same before starting your exam). For each problem decide whether to use a direct approach, or whether the integrals become easier if you apply one of the theorems.

1. p. 605, problems (1), (3), (4)
2. p. 606, problem (5) (and determine f such that $\mathbf{F} = \nabla f$).
3. p. 606, problems (7), (9), (10), (13), (14), (15), (17), (18), (19), (20) (a), (21)