Mathematics 266 – Spring 2000 — Section 201

Third home work — due Friday, January 28

Exercise 1. *Find the flux of the Coulomb field through the top half of the surface of the unit sphere.*

Exercise 2. *Find the flux of the vector field* $[0, 0, z]$ *through the top half of the surface of the unit sphere.*

Exercise 3. *Let* $V = [-y, x]/r^2$ *in 2D. Find the circulation of* V *around the path* $t \mapsto (3\cos t - \sin 2t, 3\sin t - \cos 2t)$.

Exercise 4. *Find the flux of the Coulomb field through the unit cube centred at the origin.*

Exercise 5. *Let* $V = [-y, x]/r^2$ *in 2D. Find the circulation of* V *around the path* $t \mapsto (3\cos 2t - \sin 3t, 3\sin 2t - \cos 3t)$. *Be sure to sketch this curve, too.*