

Math 241, Problem Set #10
(due **in class** Fri., 11/22/13)

Stewart, section 12.8, problems 8, 10, 16, 18, 24.

Stewart, section 13.1, problems 6, 8, 15, 16, 17, 18, 30, 32.

Also:

- A. Let $f(x, y, z) = (x^2 + y^2 + z^2)^c$. Calculate $\mathbf{F}(x, y, z)$, where $\mathbf{F} = \nabla f$.
- B. With f and \mathbf{F} as in problem A, determine $\lim_{(x,y,z) \rightarrow (0,0,0)} \mathbf{F}(x, y, z)$ in the case $c = 2/3$.
- C. With f and \mathbf{F} as in problem A, determine $\lim_{(x,y,z) \rightarrow (0,0,0)} \mathbf{F}(x, y, z)$ in the case $c = 1/3$.
- D. Take f and \mathbf{F} as in problem A. For every c strictly between 0 and 1, determine whether $\lim_{(x,y,z) \rightarrow (0,0,0)} \mathbf{F}(x, y, z)$ exists, and if so, determine its value.