

Math 53 - Multivariable Calculus

Quiz # 5

September 29th, 2011

Exercise 1. Find the linear approximation of the function $f(x, y) = \sqrt{20 - x^2 - 7y^2}$ at $(2, 1)$ and use it to approximate $f(1.95, 1.08)$.

Exercise 2. Use linear approximation to estimate the amount of tin in a closed tin can with diameter 8cm and height 12cm if the tin is 0.04cm thick.

Exercise 3. If $z = f(x - y)$, show that $\frac{\partial z}{\partial x} + \frac{\partial z}{\partial y} = 0$. (Hint, let $u = x - y$ and then use the chain rule to compute $\frac{\partial z(u)}{\partial x}$ and $\frac{\partial z(u)}{\partial y}$.)