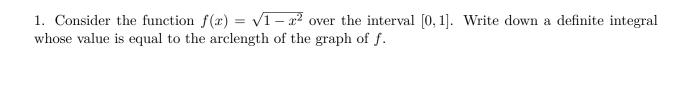
18.022 Recitation Quiz 15 October 2014



- 2. Consider the function $\mathbf{F}: \mathbb{R}^4 \to \mathbb{R}^2$ defined by $\mathbf{F}(w, x, y, z) = (2/w^2 y, 3x + \cos z)$.
- (a) Find $D\mathbf{F}$.

(b) Show that there exists an open set $U \subset \mathbb{R}^2$ containing (1,2) and a function $\mathbf{f}: U \to \mathbb{R}^2$ such that for all $x \in U$, the equations $\mathbf{F}(w,x,y,z) = \mathbf{F}(1,2,3,\pi/2)$ have a unique solution $(y,z) = \mathbf{f}(w,x)$. Show that \mathbf{f} is C^1 .