

18.022 Recitation Quiz (with solutions)
6 October 2014

1. Let $f(x, y) = \cos(3xy)$, and suppose that $x = 4st$ and $y = \frac{1}{s} + \frac{1}{t}$. Find $\partial f/\partial s$ and $\partial f/\partial t$ (by whatever method you prefer).

2. A cylindrical tree grows in such a way that its height increases at a rate of 1 meter per year and its diameter increases at a rate of $\frac{1}{10}$ meters per year. At what rate is the volume of the tree increasing when its height reaches 10 meters, assuming that its diameter is 1 meter at that time? Express your answer in terms of π and in units of cubic meters per year.