1. [EC 11.5.{2,6,20}] Use the chain rule to find the indicated (partial) derivative(s).

   (a) dz/dt for $z = x\ln(x+2y)$, $x = \sin t$, $y = \cos t$.

   (b) $\frac{\partial z}{\partial s}$ and $\frac{\partial z}{\partial t}$ for $z = x/y$, $x = se^t$, $y = 1 + se^{-t}$.

   (c) $\frac{\partial M}{\partial u}$ and $\frac{\partial M}{\partial v}$ when $(u, v) = (3, -1)$ for $M = xe^{y-z^2}$, $x = 2uv$, $y = u - v$, $z = u + v$.

2. [EC 11.5.28] Find $\frac{\partial z}{\partial x}$ and $\frac{\partial z}{\partial y}$ for $yz = \ln(x + z)$.

3. [EC 11.5.32] The radius of a right circular cone is increasing at a rate of 1.8 in/s while its height is decreasing at a rate of 2.5 in/s. At what rate is the volume of the cone changing when the radius is 120 in. and the height is 140 in.?

4. [EC 11.5.44(b,c)] Find $\partial z/\partial\theta$ and $\partial^2 z/\partial r\partial\theta$ for $z = f(x, y)$ where $x = r\cos\theta$ and $y = r\sin\theta$.