MATH 253 Name: _____

Quiz 5 February 28, 2020

Instructions: Five points total.

1. (2 pts.) Suppose that $f(x,y) = \ln(3x+2y)$ where $x(s,t) = s\sin t$ and $y(s,t) = t\cos s$. Use notation correctly for full credit.

   Find $\dfrac{\partial f}{\partial t}$ and $\dfrac{\partial f}{\partial t}\left(\pi, \dfrac{\pi}{2}\right)$.

2. (3 pts.) Consider the function $f(x,y) = ye^x$.

   (a) Find the directional derivative $D_{\mathbf{u}}f$ at the point $P(2,0)$ in the direction of $\mathbf{v} = \langle -6, 8\rangle$.

   (b) In what direction should you move from $(2,0)$ to maximize $f(x,y)$?