(1) Use the limit definition of the partial derivative to find $\frac{\partial f}{\partial x}$ if $f(x, y) = x^2y$.

(2) Let $g(x, y, z) = \sin(xyz) - x^2y + yze^x - x^2$
   
   (a) Find $\frac{\partial g}{\partial x}$.

   (b) Find $\frac{\partial g}{\partial y}$.

   (c) Find $\frac{\partial g}{\partial z}$.

(3) Let $f(x, y, z) = x/(y + z)$.
   
   (a) Find $f_z(3, 2, 1)$.

   (b) Find $\nabla f$. 
(4) Find the equation of the tangent plane of the surface \( z = e^{x^2-y^2} \) at the point \((1, -1, 1)\).

(5) Use linear approximation to estimate the value of \( \sqrt{20 - (1.95)^2 - (1.08)^2} \).

(6) A particle’s position at time \( t \) is \((te^t, 2t^5, 1/(2t+1))\).

(a) What is the particle’s velocity at time 0?

(b) What is the particle’s acceleration at time 0?