1. Find the linear approximation $L(x, y)$ to $f(x, y) = x^2y^3 + 3xy$ at the point $(1, 3)$.

   How good is your approximation at $(1.2, 3.1)$?

2. Let $f(x, y) = \sin(xy)\cos(x) + 7$

   (a) Find the linear approximation of $f(x, y)$ at $(\pi, 0)$.
   (b) Find the plane tangent to the surface $z = f(x, y)$ at (π, π).