
Let \( f(x, y) = \cos(x) + \sin(y) \).

(1) [3] Find the domain and range of \( f \).

(2) [3] Circle all the statements that apply to the level curves of \( f(x, y) \):
   (a) They display a periodic pattern.
   (b) There are no level curves outside of the square \(-2 \leq x \leq 2, -2 \leq y \leq 2\).
   (c) The level curve \( f(x, y) = 0 \) is a union of straight lines.

(3) [4] Give an equation for the plane tangent to the graph \( z = f(x, y) \) at the point \( P = (\pi/3, \pi/2, 3/2) \).

(4) [2] Find a parametric equation of the tangent line at \( P \) to the curve of intersection of this graph with the plane \( x = \pi/3 \).

(5) [3] Find the total differential of \( f(x, y) \) and use it to approximate \( f(\pi/3 - 0.1, \pi/2 + 0.2) \).