

Name:

SM223 – Calculus III with Optimization  
Assoc. Prof. Nelson Uhan

Fall 2017

### Quiz 6 – 19 October 2017

**Instructions.** You have 10 minutes to complete this quiz. You may use a calculator. You may not use any other materials (e.g., notes, homework, books). Show all your work.

Problem	Weight	Score
1	1	
2	1	
3	1	
Total		/ 30

**Problem 1.** Let  $f(x, y) = 1 - x \cos \pi y$ . Find an equation of the plane tangent to the surface  $z = f(x, y)$  at  $(1, 1, 2)$ . Use your equation to approximate the value of  $f(0.99, 1.03)$ .

(turn over)

**Problem 2.** Let  $v = x^2 \sin y$ ,  $x = s + 2t$ ,  $y = st$ . Find  $\partial v / \partial s$  and  $\partial v / \partial t$ .

**Problem 3.** Let  $f(x, y) = x^2 y + \sqrt{y}$ . Find  $\nabla f(x, y)$ .