



FERPA RELEASE: Because of privacy concerns, we are not allowed to return your graded homework in lecture without your permission. If you wish us to return your homework in lecture, please sign on the line indicated below. Otherwise, you will have to pick your homework up in your instructor's office.

SIGN HERE: \_\_\_\_\_.

Problem	Points	Score
1	4	
2	4	
3	4	
Total	12	

1. (4) Compute the tangent plane to the function

$$f(x, y) = x \cos y + x^2 \sin y$$

at the point  $(1, \pi/4)$ .

2. (4) Compute the directional derivative of the function

$$f(x, y) = \arctan(xy)$$

at the point  $(1, 2)$  in the direction of the vector  $\mathbf{v} = 5\mathbf{i} + 10\mathbf{j}$ .

3. (4) Find the local maximum and minimum values and saddle point(s) of the function

$$f(x, y) = x^3 - 12xy + 8y^3.$$