MATH 261 Quiz 7 Name: .
Student number:

Show all work. 5 points each.

1. Find the maximum rate of change of at the given point and the direction in which it occurs. $f(x, y) = \sin(xy)$ at $(1, 0)$.

2. Show $(-1, -1)$ is a critical point of $f(x, y) = x^4 + y^4 - 4xy + 2$ and determine if it is a local max, local min or saddle point.

Second Derivative Test

$D = f_{xx}\, f_{yy} - (f_{xy})^2$

$D > 0$ and $f_{xx} > 0$ local min

$D > 0$ and $f_{xx} < 0$ local max

$D < 0$ saddle point