## 16.39 [1G4] Are the following functions differentiable in (0,0)?

Exercises

$$f_1(x,y) = \begin{cases} x + y & \text{if } x > 0 \\ x + ye^{-x^2} & \text{if } x \le 0 \end{cases},$$

$$f_2(x,y) = \sqrt{x^2 + y^2}$$

$$f_3(x,y) = (arctan($$

$$f_3(x,y) = (\arctan(y+1))^{x+1}, \quad f_4(x,y) = \max\{x^2,y^2\}$$
.

$$J_3(x,y) = (\operatorname{dictail}(y+1))$$
 ,  $J_4(x,y) = \operatorname{midx}\{x$  , Solution 1. [165]