

8.3 - Maxima, Minima and Saddle Points

Let $D = f_{xx}(a,b)f_{yy}(a,b) - (f_{xy}(a,b))^2$ where (a,b) is a critical point of f . Then

$D > 0$ and $f_{xx}(a,b) < 0 \Rightarrow (a,b, f(a,b))$ is a local maximum

$D > 0$ and $f_{xx}(a,b) > 0 \Rightarrow (a,b, f(a,b))$ is a local minimum

$D < 0 \Rightarrow (a,b, f(a,b))$ is a saddle point

$D = 0 \Rightarrow$ test fails

Examples: