Worksheet #26

(1) Find all critical points. Indicate whether each point gives a local minimum, local maximum, or a saddle point.

$$f(x, y) = xy^2 - 6x^2 - 3y^2$$

(2) Find the global minimum value and global maximum value of $f(x, y) = 4x + 6y - x^2 - y^2$ on $S = \{(x, y) : 0 \leq x \leq 4, 0 \leq y \leq 5\}$ and indicate where they occur.

(3) Find the 3-dimensional vector with length 9, the sum of whose components is a maximum.