

SUPPLEMENTARY PROBLEMS FOR SECTION 3.3

Find the critical points of the given function and then determine whether they are local maxima, local minima, or saddle points.

A. $f(x, y, z) = 25 + x^2 - 4x + 2y^2 - 10y + 6z^2 - 20z + 2xy + 2xz + 6yz$

B. $f(x, y, z) = x^2 + 2y^2 + 4z^2 + 2xy + 2xz + 6yz + 8$

C. $f(x, y, z) = -15 - x^2 + 10x - 7y^2 - 3z^2 + 4xy - 20y + 2yz$