

Find and classify all critical points of

1.  $f(x, y) = x^2 + xy + y^2 + 3x - 3y + 4$

2.  $g(x, y) = 9 - 2x + 4y - x^2 - 4y^2$

3.  $h(x, y) = x^2 - 4x - 23 - y^3 - 9y^2 - 27y + xy$