(1) Where does the line through (1, 0, 1) and (4, -2, 2) intersects the plane \(x+y+z = 6\)?

(2) Identify and sketch the surface given by
\[-4x^2 + 8x + y^2 + 2y - \frac{4z^2}{9} = 7.\]

(3) Find and sketch the domain of the function \(f(x, y) = \sqrt{y-x} \ ln(y+x)\).