

Partial Differentiation
Functions of more than one variable

Question

Assume $z \geq 0$.

Given that $4z^2 = (x - z)^2 + (y - z)^2$ defines z as a function of x and y , sketch level curves of this function and describe its graph.

Answer

If $z = c > 0$, we have $(x - c)^2 + (y - c)^2 = 4c^2$ which is a circle in the plane $z = c$, with centre (c, c, c) and radius $2c$.

