

Worksheet for 2020-09-09

Problem 1. The two space curves $\mathbf{r}_1(t) = \langle 2t, 2 - 2t, 3 + t^2 \rangle$ and $\mathbf{r}_2(t) = \langle 6 - 2t, 2t - 4, t^2 \rangle$ intersect. Find the coordinates of the point of intersection, and find the angle formed by the two curves at that point of intersection.

Problem 2. Find a function $f(x, y)$ such that, for every nonnegative number k , the level set $f(x, y) = k$ is a circle of radius $2k$ centered at the point $(2, 3)$.

What kind of shape is the surface $z = f(x, y)$?