Partial Differentiation
Functions of more than one variable

Question
If each level curve $f(x, y) = C$ is a circle with centre $(0, 0)$ and the given radius, find $f(x, y)$

(a) C

(b) C^2

(c) $\sqrt{c}4$

(d) $\ln C$

Answer

(a) $f(x, y) = C$ is $x^2 + y^2 = C^2$ implies that $f(x, y) = \sqrt{x^2 + y^2}$.

(b) $f(x, y) = C$ is $x^2 + y^2 = C^4$ implies that $f(x, y) = (x^2 + y^2)^(1/4)$.

(c) $f(x, y) = C$ is $x^2 + y^2 = C$ implies that $f(x, y) = x^2 + y^2$.

(d) $f(x, y) = C$ is $x^2 + y^2 = (\ln C)^2$ implies that $f(x, y) = e^{\sqrt{x^2+y^2}}$.