Consider the following function:



Where the function f: R3 → R has its domain as dom f: {x ∈ R3 : x1+x2 > 0, x3 > 0} and

log is the natural log.

Implement different numerical methods in Python to optimize the given convex function.

i. Gradient descent with backtracking line search. Use tinit = 1, α = 0.4, β = 0.5

ii. Newton’s method (use same values for line search as part i)