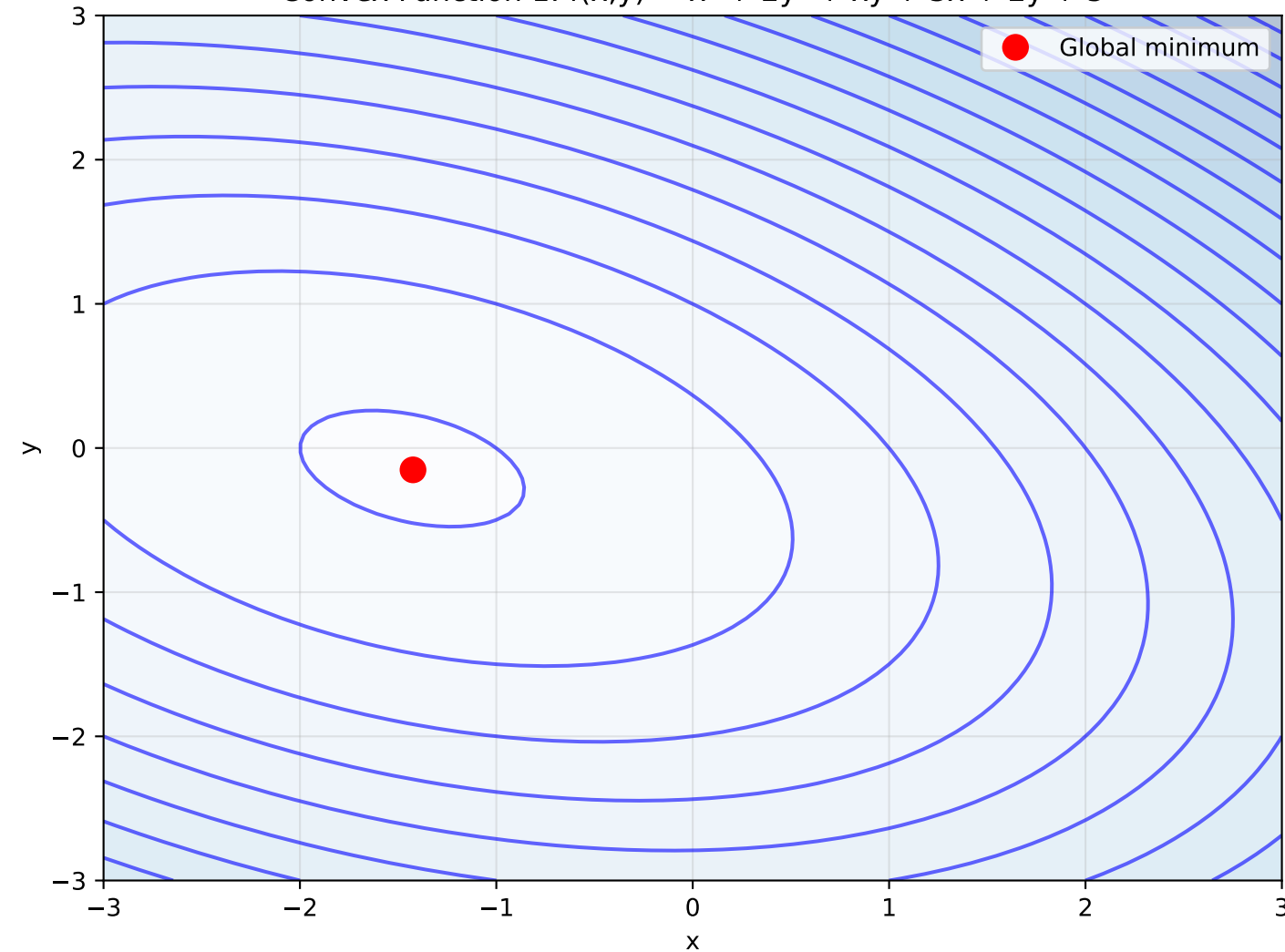
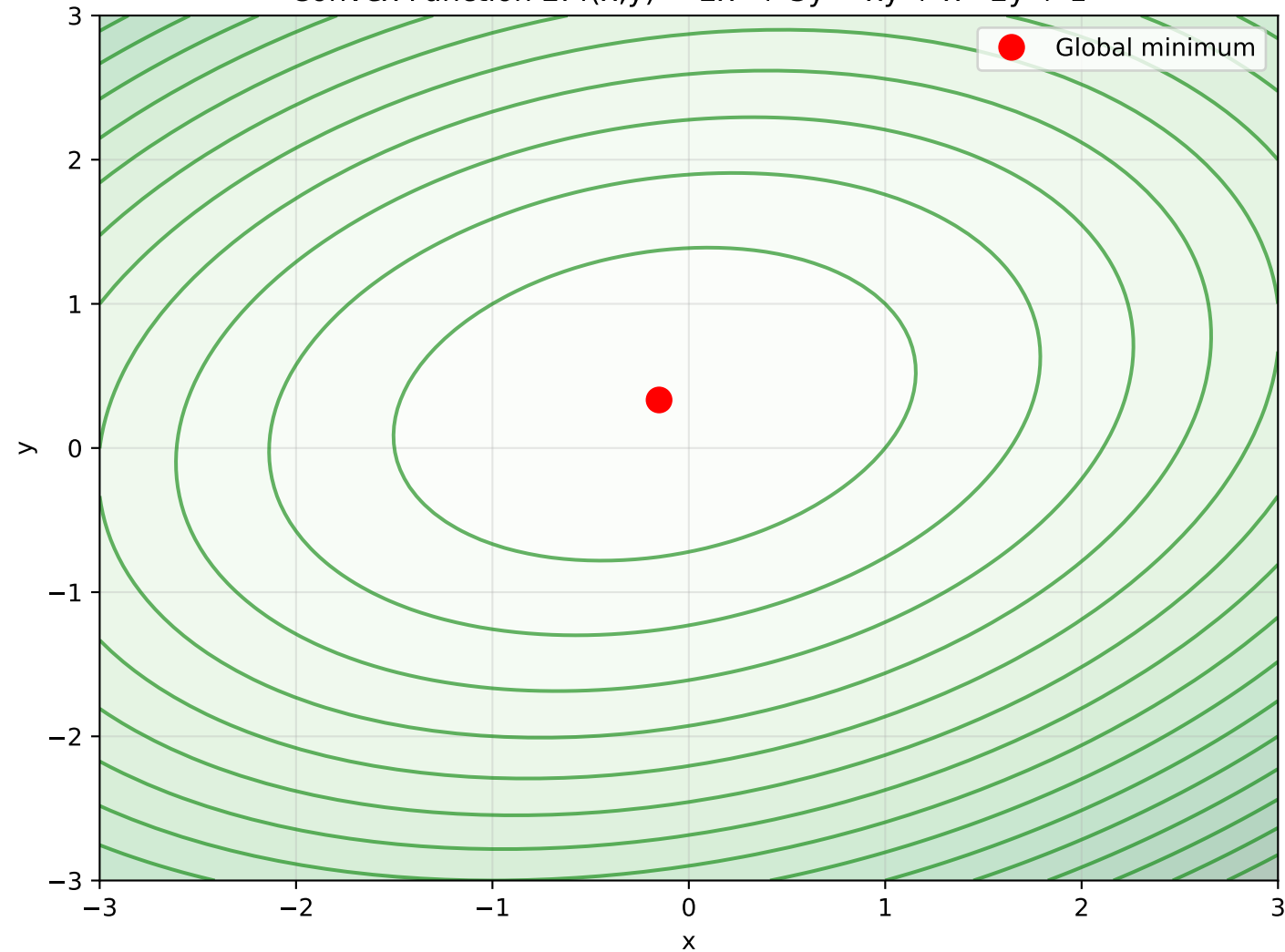


Convex vs Non-Convex Functions: Geometric Analysis

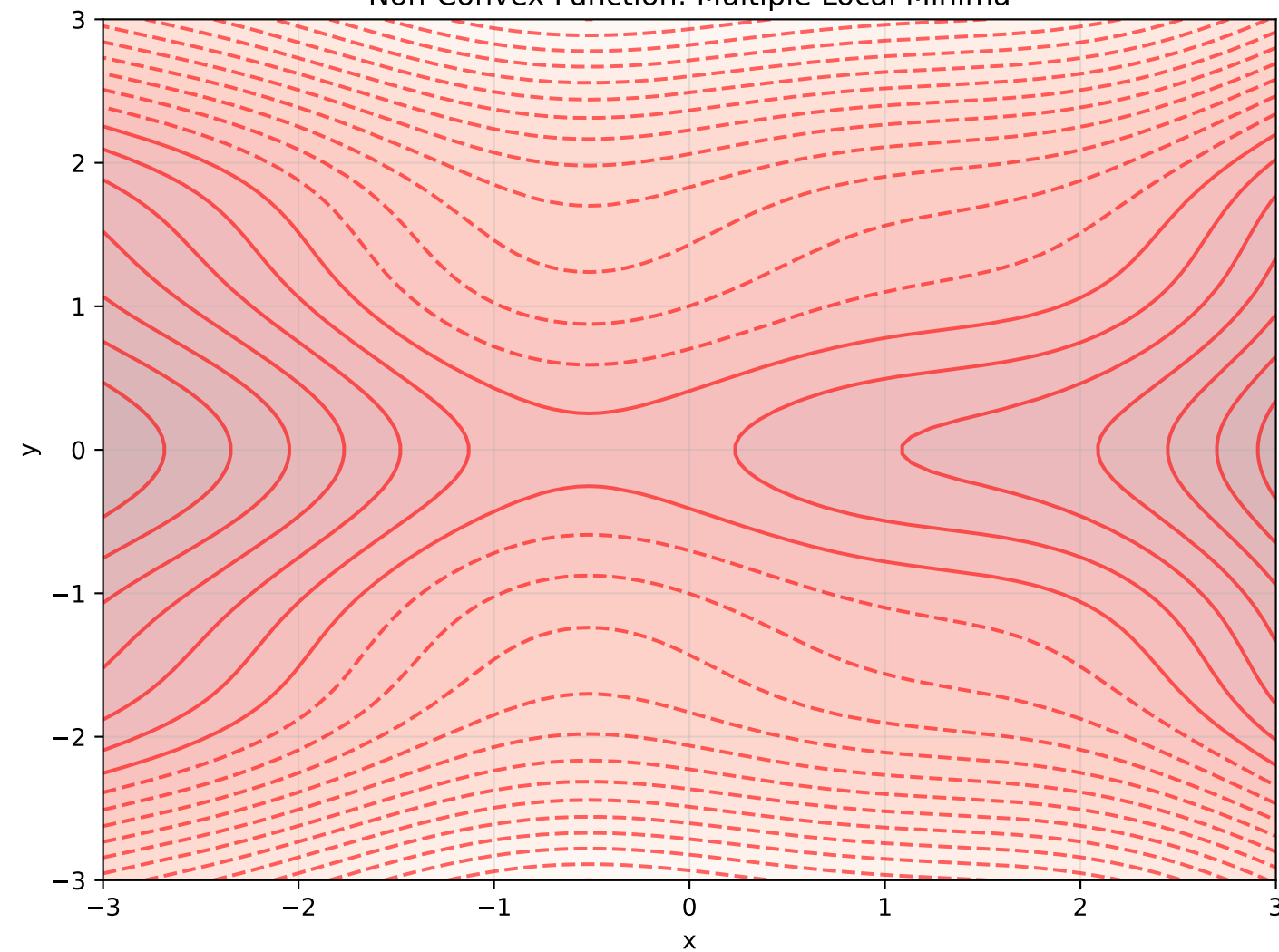
Convex Function 1: $f(x,y) = x^2 + 2y^2 + xy + 3x + 2y + 5$



Convex Function 2: $f(x,y) = 2x^2 + 3y^2 - xy + x - 2y + 1$



Non-Convex Function: Multiple Local Minima



Cross-Section Comparison ($y = 0$)

