MATLAB Exercises for
22MAT220:
MATHEMATICS FOR COMPUTING 3

Specify whether the function is strongly convex, strictly convex, convex, or nonconvex, and give a brief justification for each.

1. Plot the function f(x)=x log(x) for x>0 and log is to the base 10, and check whether it is convex or concave. What if the base of logarithm is 'e'?
2. Plot the function f(x)=log(1+exp(b x)) for b,x>0 and log is to the base e, and check whether it is convex or concave for b positive and b negative.
3. Plot the function $2x^2 - 3xy + 5y^2$, for x and y positive. Check whether it is convex or concave or neither.