

HW 3

1. The following data are from a Cauchy(θ) distribution with location parameter θ , which has a pdf:

$$f(x | \theta) = \frac{1}{\pi[1 + (x - \theta)^2]}$$

1.77, -0.23, 2.76, 3.80, 3.47, 56.75, -1.34, 4.24, -2.44, 3.29,
3.71, -2.40, 4.53, -0.07, -1.05, -13.87, -2.53, -1.75, 0.27, 43.21

- a) Graph the log likelihood function.
- b) Find the MLE of θ using any method. Try all the following starting points if your method requires a starting point:

-11, -1, 0, 1.5, 4, 4.7, 7, 8, 38

Discuss your results.

If your method requires a starting interval, try the points -1 and 1, -2 and -1, and finally -3 and 3?

2. Use any multivariate method to find the maximum of

$$f(x_1, x_2) = -(x_1 - 2)^4 - (x_1 - 2x_2)^2$$

with starting points 0 and 3.