

Ensembles, Estimation, Gaussians HW 2 (1) - (4)

1. Say $p(x)$ is allowed to be nonzero only on $[a, b]$,
Find the maximum-entropy distribution p for which

$$\langle x \rangle = \int_a^b x p(x) dx = M \quad (a < M < b).$$

2. For p a p.d.f. on the entire real line:

Is there a maximum-entropy distribution given the constraints

$$\langle x \rangle = 0$$

$$\langle x^2 \rangle = \sigma^2$$

$$\langle x^4 \rangle = \gamma \sigma^4 ?$$