

## CSCI 378 HW8

In the lecture notes, I claim that if I take a single daily random sample from  $\text{Laplace}(0, \frac{1}{\sqrt{2}})$ , I should expect to get about 4 samples per year that exceed 3.

Justify this mathematically by computing. Don't believe everything you read! Let's fact-check this statement. Suppose:

$$x \sim \text{Laplace}(0, \frac{1}{\sqrt{2}})$$

(a) What is the probability that  $x \geq k$ , for some positive number  $k$ ?

$$P(x \geq k) = \int_k^{\infty} \frac{e^{-\frac{|x-\mu|}{b}}}{2b} dx$$
$$= \dots$$

(b) how many samples per year that exceed 3 should I expect, given  $P(x \geq 3)$ ?