Math 152, Fall 2022
Jo Hardin
WU # 22
Tuesday 12/6/22

Your name: _____

Names of people you worked with: _____

Task: Consider a test δ with size = α_0 on data which are iid $N(\mu, \sigma^2)$. You are testing the following hypotheses:

$$H_0: \quad \mu \geq \mu_0$$
$$H_1: \quad \mu < \mu_0$$

Fill in the following table (for a size α_0 test with reasonable properties):

power	= or < or > or $\to$	α_0 or $1-\alpha_0$ or 0 or 1	when
$\pi(\mu, \sigma^2 \mid \delta)$			$\mu = \mu_0$
$\pi(\mu, \sigma^2 \mid \delta)$			$\mu > \mu_0$
$\pi(\mu, \sigma^2 \mid \delta)$			$\mu < \mu_0$
$\pi(\mu, \sigma^2 \mid \delta)$			$\mu \to \infty$
$\pi(\mu, \sigma^2 \mid \delta)$			$\mu \to -\infty$

Solution:

1. $\pi(\mu, \sigma^2 \mid \delta) = \alpha_0 \qquad \mu = \mu_0$
2. $\pi(\mu, \sigma^2 \mid \delta) < \alpha_0 \qquad \mu > \mu_0$
3. $\pi(\mu, \sigma^2 \mid \delta) > \alpha_0 \qquad \mu < \mu_0$
4. $\pi(\mu, \sigma^2 \mid \delta) \to 0 \qquad \mu \to \infty$
5. $\pi(\mu, \sigma^2 \mid \delta) \to 1 \qquad \mu \to -\infty$