# Quiz Feb 6

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**Problem 1.** Suppose that $X_1, \ldots, X_n$ are i.i.d. $N(\mu, 1)$. You want to test $H_0 : \mu = 0$ against $H_1 : \mu \neq 0$. Write down the rejection region for the level 0.02 test.

two-sided

$$\bar{X} > \mu_0 + \frac{z_{\frac{\alpha}{2}}\sigma}{\sqrt{n}}, \quad \bar{X} < \mu_0 - \frac{z_{\frac{\alpha}{2}}\sigma}{\sqrt{n}}$$

$\mu_0 = 0$

$z_{\frac{\alpha}{2}} = z_{0.01} = 2.33$

$\sigma = 1$

$n$

$$\bar{X} > \frac{2.33}{\sqrt{n}}, \quad \bar{X} < -\frac{2.33}{\sqrt{n}}$$

$$\left(-\frac{2.33}{\sqrt{n}}, \frac{2.33}{\sqrt{n}}\right)$$