Let $X$ be a random variable with distribution $N[\mu, 2.4 \text{ m/s}]$, where $\mu$ is unknown, and suppose that you observe $X$ once and obtain the value 37.9 m/s.

1. Use this observation of $X$ to compute the $p$-value of the hypothesis test with

$$H_0 : \mu = 40 \text{ m/s} \quad \text{and} \quad H_a : \mu \neq 40 \text{ m/s}.$$  

When you report the $p$-value, round it to exactly 4 digits. (Also, explain how you computed this — it should involve a standard normal distribution.)

2. Suppose that the significance level for this test is chosen to be 0.05. Did you find statistically significant evidence against the null hypothesis? (Be sure to state how you determine this.)

3. Using your observation of $X$, compute a 95% confidence interval for $\mu$ and report the result rounded to exactly 2 digits. (And of course, explain the process of computing it.)