Ground rules: Open Class notes from website or notes in own handwriting or typed by one self. No other resources allowed. Individual work.

1. (10 points) Let $n \geq 1$, $X_1, X_2, \ldots X_n$, be an i.i.d random sample with distribution $X \sim$ Normal(μ, σ^2). Let $\overline{X}$ be the sample mean and S^2 be the sample variance. Let

$$T = \frac{\sqrt{n}(\overline{X} - \mu)}{S}.$$

Find the distribution [1] of T

[1] You may use any result stated in class to prove the above unless the result is the question itself. In such a case please state the result precisely and also indicate why the hypothesis (if any) are satisfied.