HW 4

Problems 1-2 concern the following proposition from Ch 6 of your textbook.

Proposition: If $Z \sim N(0,1)$ and $U \sim \chi_n^2$ are independent, then

$$T = \frac{Z}{\sqrt{U/n}} \sim t_{(n)}.$$

Problem 1 (6.1) If $Z \sim N(0,1)$ and $U \sim \chi_n^2$, what is the density of $W = \sqrt{\frac{U}{n}}$?

Problem 2 (6.1) If $Z \sim N(0,1)$ is independent of $U \sim \chi_n^2$, what is the density of Z/W, where W is defined in Problem 1? (Hint: See section 3.6.1 of your textbook.)

Problem 3 (6.4) If $T \sim t_{(7)}$, find the value of t_0 such that $P(|T| < t_0) = 0.9$.