

Problems from Assignment 13

1. (a) Suppose X and Y are independent random variables and suppose the $f_Y(y)$ is an even function. Show that $f_{Y/X}(w)$ is an even function.
(b) Show if $T \sim t_n$ then f_T is an even function. You may not use the density of T since we computed that using the fact that f_T is symmetric around the origin which you are now proving.
2. Let $T \sim t_5$.
 - (a) Write $f_T(t)$ without any Γ in it.
 - (b) Use Simpson's rule with $n = 6$ intervals to estimate $P(0 \leq T \leq 1.5)$.
 - (c) Using the above estimation, estimate $P(T \geq 1.5)$.
 - (d) Is this consistent with Table A.2 in the book?