

Homework 1, STAT764

Due: August 30, 2018

1. Draw the following normal density curves on a single plot, with appropriate 'xlab', 'ylab', 'title', 'lty', and 'legend':

(i) mean = 0, variance =1;

(ii) mean =1, variance =2;

(iii) mean = 2, variance =3.

2. Make a simulation to verify the following theorem: if $X_1 \sim N(\mu_1, \sigma_1^2)$, $X_2 \sim N(\mu_2, \sigma_2^2)$, and X_1 and X_2 are independent, then $X_1 + X_2 \sim N(\mu_1 + \mu_2, \sigma_1^2 + \sigma_2^2)$.

3. Make a simulation to verify the following theorem: if $X_1 \sim \chi_{n_1}^2$, $X_2 \sim \chi_{n_2}^2$, and X_1 and X_2 are independent, then $X_1 + X_2 \sim \chi_{n_1+n_2}^2$.