(ii) Suppose that X_1, X_2, X_3 and X_4 are all independent random variables coming from this normal distribution (i.e. X_1, X_2, X_3 and X_4 each has a normal distribution with mean 10 and variance 16), and define T_4 and $\overline{X}$ by

$$T_4 = X_1 + X_2 + X_3 + X_4,$$

$$\overline{X} = (X_1 + X_2 + X_3 + X_4) / 4.$$

(a) Find Prob($\overline{X} > 12$). [2]

(b) Find Prob($T_4 < 46$). [2]

(c) Discuss why your answer to 6(i) (a) and your answer to question 6(ii)(a) differ in the way in which they do. [2]