

(PLEASE PRINT LEGIBLY)

Compare what you derived in worksheet 7 with what you get for the first 6 questions. All of the approximations for the probabilities use your Z, T, F, or χ^2 tables.

1. Let X_1 be a random sample from a $N(x, \mu_X, \sigma_X)$ such that $\mu_X = 40$ and $\sigma_X^2 = 64$.

Find the approximate $\Pr(X > 44)$ using tables.

2. Let X_1, X_2, X_3, X_4, X_5 be a random sample from a $N(x, \mu_X, \sigma_X)$ such that $\mu_X = 40$ and $\sigma_X^2 = 64$.

Find the approximate $\Pr(\bar{X} > 44)$ using tables.

3. Suppose X_1, X_2, X_3, X_4 is a random sample from an $N(x, \mu_X = 50, \sigma_X = 14)$.

Find the approximate probability that $\Pr(43 \leq \bar{X} \leq 71)$ using tables.

4. Suppose X_1, X_2, X_3, X_4 is a random sample from an $N(x, \mu_X = 50, \sigma_X = 14)$.

Find the approximate probability that $\Pr(0.5248 \leq \frac{S_X^2}{\sigma_X^2} \leq 1.62584)$ using tables.

5. Suppose Z_1, Z_2, Z_3, Z_4, Z_5 is a random sample from an $N(z, \mu_Z = 0, \sigma_Z = 1)$

Let $V = Z_1^2 + Z_2^2 + Z_3^2 + Z_4^2 + Z_5^2$ Find the approximate probability that $\Pr(V \leq 13.0784)$ using tables.

6. Let $X_1, X_2, X_3, X_4, \dots, X_{10}$ is an i.i.d. from a $N(x, \mu_X, \sigma_X)$ distribution and $Y_1, Y_2, Y_3, \dots, Y_{15}$ is an i.i.d. from a $N(y, \mu_Y, \sigma_Y)$ distribution whilst $\sigma_X = \sigma_Y$

Approximate $\Pr(\frac{S_X^2}{S_Y^2} \leq 4.03)$ using tables.

7. Let $X_1, X_2, X_3, X_4, \dots, X_{10}$ is an i.i.d. from a $N(x, \mu_X, \sigma_X)$ distribution and $Y_1, Y_2, Y_3, \dots, Y_{15}$ is an i.i.d. from a $N(y, \mu_Y, \sigma_Y)$ distribution whilst $\sigma_X = \sigma_Y$

Approximate $\Pr(\frac{S_X^2}{S_Y^2} > 3.7)$ using tables.

8. Let $X_1, X_2, X_3, X_4, \dots, X_8$ is an i.i.d. from a $N(x, \mu_X, \sigma_X)$ distribution and $Y_1, Y_2, Y_3, \dots, Y_6$ is an i.i.d. from a $N(y, \mu_Y, \sigma_Y)$ distribution whilst $\sigma_X = \sigma_Y$

Approximate $\Pr(\frac{S_X^2}{S_Y^2} > 2)$ using tables.

9. Let $X_1, X_2, X_3, X_4, \dots, X_{13}$ is an i.i.d. from a $N(x, \mu_X, \sigma_X)$ distribution and $Y_1, Y_2, Y_3, \dots, Y_{11}$ is an i.i.d. from a $N(y, \mu_Y, \sigma_Y)$ distribution whilst it is assumed that $\sigma_X = 2\sigma_Y$

Approximate $\Pr(\frac{S_X^2}{S_Y^2} > 3)$ using tables.

10. Let $X_1, X_2, X_3, X_4, \dots, X_{13}$ is an i.i.d. from a $N(x, \mu_X, \sigma_X)$ distribution and $Y_1, Y_2, Y_3, \dots, Y_{11}$ is an i.i.d. from a $N(y, \mu_Y, \sigma_Y)$ distribution whilst it is assumed that $2\sigma_X = \sigma_Y$

Approximate $\Pr(\frac{S_X^2}{S_Y^2} > 3)$ using tables.