Given: $\overbar{X}$ = 97, sx = 16, nx = 64, $\overbar{Y}$ = 90, sY = 18, nY = 81; assume the samples are independent. Construct a confidence interval of μX – μY  according to (a) C = .95 and (b) C = .99

Here are some notes:

Rule for constructing a confidence interval for μX – μY  when σx and σy are unknown

($\overbar{X}- \overbar{Y}) \pm t\_{p}s\_{\overbar{X}-\overbar{Y}}$

tp is the magnitude of t for which the probability is p of obtaining a value so deviant or more so (in either direction)

p = (1 – C) where C is the confidence coefficient

$s\_{\overbar{X}-\overbar{Y}}$ is the estimate of the standard error of the difference between two means

$$d= \frac{t\_{p}s\_{\overbar{X}-\overbar{Y}}}{s\_{av}}$$

d is the difference between ($\overbar{X}- \overbar{Y})$ and the outer limits of the interval estimate, expressed in terms of the number of standard deviations of the variable

$s\_{av}$ is the average of sx and sy ( which is reasonable satisfactory if nx and ny are approximately the same size)