Power Homework
Homework #3, 20 pts

A. Assume that the following are single sample t tests ($df = n$ -1). Solve for the requested components.
1. Solve for *d*, δ, and 1-β (@ p<.05.)

a $t(24) = 2.71$, $p < .02$, Mean 1 = 4.35 Population Mean = 3.01
n = 25

b $t(160) = 2.71$, $p < .01$, Mean 1 = 4.35 Population Mean = 3.01
n = 161

c $t(160) = 2.71$, $p < .01$, Mean 1 = 3.50 Population Mean = 3.01
n = 161

2. Using the Data above solve for 1-β (@ p<.01.)

3. With respect to A1a and A1b, what happened to the Standard Error of the Mean (SEM) and how was power affected?

4. 1Ab and A1c should yield the same results, but the means are quite different. How is this possible?

4. Using the data in part A1a, what n is required/desired in order to achieve 1-β (@ p<.05.) = .80

5. Using the data in part A1a, what n is required/desired in order to achieve 1-β (@ p<.05.) = .99

B. Assume that the following are independent sample t tests ($df = n_1 + n_2 - 2$). Solve for the requested components
1. Solve for *d*, δ, and 1-β (@ p<.05.)

a $t(24) = 2.71$, $p < .02$, Mean 1 = 4.35 Mean 2 = 3.01
$n_1 = 13$ $n_2 = 13$

b $t(160) = 2.71$, $p < .01$, Mean 1 = 4.35 Mean 2 = 3.01
$n_1 = 81$ $n_2 = 81$

2. Using the data in part B1a solve for 1-β (@ p<.01.)

3. Using the data in part B1a, what n is required/desired in order to achieve 1-β (@ p<.05.) = .80

4. Using the data in part B1a, what n is required/desired in order to achieve 1-β (@ p<.05.) = .99

C. For the following correlations solve for the requested components.
Note. *df* for correlation = *n* - 2.
1. Solve for r^2, *d'* , δ, and 1-β (@ *p*<.05.)

a. *r*(28) = .20, p > 05, ns
n = 30

b. *r*(100) = .20, p < .05.
n = 102

c. *r*(60) = .33, p < .01.
n = 62

2. With respect to C1a and C1b, in which instance is the percent overlap between the distribution of H_o and H_A that is attributable to sampling error the greatest (i.e. α + β)?

3. Using the data in part C1a, what *n* is required/desired in order to achieve 1-β (@ *p*<.05.) = .80

4. Using the data in part C1a, what *n* is required/desired in order to achieve 1-β (@ *p*<.05.) = .99

5. Find the appropriate ϕ^2, *d*, ~~δ~~, and ~~1-β (@ *p*<.02.)~~ for the following 2X3 chi square.
χ^2(*df* =2, *n* = 115) = 5.99, *p*<.05.

D. For the following *F* Statistics, solve for the requested components.
1. Solve for R^2, δ, and 1-β (@ *p*<.05.). (For problem a, assume that you have two groups. ~~For problem b & c assume that you have more than 2 groups~~).

a. *F*(1, 173) = 3.13, p > .05, ns.
n = 175

~~b. *F*(2, 172) = 3.13, p < .05.~~
~~n = 175~~

~~c. *F*(4, 170) = 3.13, p < .05.~~
~~n = 175~~

~~2. Why is the estimate of effect size in D1c, greater than in D1b~~? Drop

3. Using the data in part D1a solve for 1-β (@ *p*<.01.).

4. Using the data in part D1a, what *n* is required/desired in order to achieve 1-β (@ *p*<.01.) = .99.

~~5. Using the data in part D1b, what *n* is required/desired in order to achieve 1-β (@ *p*<.01.) = .99.~~ D- op