Homework #12 OPTIONAL
Due Thursday April 4, 2012
Econ 20150
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If you wish, you can do these problems and have it count additionally as an extra homework assignment. The rationale for this is to convince yourself that, given sufficient time and a lack of stress, that you could have done all of the questions.

1. Standard Normal Distributions
    a. For a Standard Normal Distribution, what is area to the right of 1.6? A. 0.4501 B. 0.9452 C. 0.0548 D. 0.1096
    b. For a Standard Normal Distribution, what is area to the right of 2.3? A. 0.0107 B. 0.1877 C. 0.1251 D. 0.0760
    c. For a Standard Normal Distribution, what is area to the left of 0.9? A. 0.8159 B. 0.9554 C. 0.3681 D. 0.6179
    d. For a Standard Normal Distribution, what is area to the left of -1.1? A. 0.1357 B. 0.7642 C. 0.2713 D. 0.3821
    e. For a Standard Normal Distribution, what is area in both tails farther from the mean than -1.9? A. 0.7642 B. 0.0574 C. 0.1149 D. 0.0257
    f. For a Standard Normal Distribution, what is area in both tails farther from the mean than 2.1? A. 0.0252 B. 0.0715 C. 0.0833 D. 0.0357
    g. For a Standard Normal Distribution, what values leave probability 0.041 in both tails? A. ±2.4242 B. ±2.0435 C. ±1.0218 D. ±1.7392
    h. For a Standard Normal Distribution, what values leave probability 0.223 in both tails? A. ±0.7621 B. ±1.2186 C. ±0.6093 D. ±1.2186
    i. For a Standard Normal Distribution, what values leave probability 0.469 in both tails? A. ±0.241 B. ±0.0778 C. ±1.5382 D. ±0.7241

2. Normal Distributions
    a. For a Normal Distribution with mean 0 and standard deviation 4.8, what is area to the left of 9.6? A. 0.9772 B. 0.0326 C. 0.5612 D. 0.0455
    b. For a Normal Distribution with mean 12 and standard deviation 8.9, what is area to the left of 4.9? A. 0.0888 B. 0.4237 C. 0.2119 D. 0.7881
    c. For a Normal Distribution with mean -8 and standard deviation 4.6, what is area to the right of 2.6? A. 0.1251 B. 0.0107 C. 0.1587 D. 0.9590
    d. For a Normal Distribution with mean 5 and standard deviation 0.4, what is area in both tails farther from the mean than 4.2? A. 0.0967 B. 0.0357 C. 0.1587 D. 0.5216
    e. For a Normal Distribution with mean 9 and standard deviation 0.6, what is area in both tails farther from the mean than 8.7? A. 0.6171 B. 0.1587 C. 0.4168 D. 0.5987
    f. For a Normal Distribution with mean 15 and standard deviation 1.7, what values leave probability 0.054 in both tails? A. (-1.9268, 1.9268) B. (11.7244, 18.2756) C. (13.3622, 16.6378) D. (12.8967, 17.1033)
    g. For a Normal Distribution with mean 1 and standard deviation 9.4, what values leave probability 0.209 in both tails? A. (-1.1499, 1.3627) B. (-0.9459, 2.9459) C. (-10.8094, 12.8094) D. (-4.9047, 6.9047)
    h. For a Normal Distribution with mean 1 and standard deviation 7.0, what values leave probability 0.333 in both tails? A. (-5.7766, 7.7766) B. (-2.0023, 4.0023) C. (-0.9681, 0.9681) D. (-0.8252, 1.1109)

3. A report on problems at major banks in bringing suit against credit card borrowers who were in default (*American Banker*, "OCC Probing JPMorgan Chase Credit Card Collections") explained that some suits were filed by law firms acting as subcontractors and these might have been less accurate, since those firms were paid merely for completion. (The bank distinguishes between in-house lawyers and 'outhouse' lawyers!) The report notes that Chase Bank's own samples revealed many of the cases exhibited significant discrepancies from the

bank's estimate of the amount owed. Assume that the bank made a random sample of 40 cases to find that 82.86% of cases filed were correct; the bank expects 95% to be correct. Clearly state the null hypothesis, test statistic, critical values, confidence intervals, and p-values. What is the p-value for the hypothesis that the subcontractor law firms were not less accurate than the bank's own lawyers? What do you believe the bank's collections managers ought to have done?

4. After a hoax that purported to test differences in IQ between different browser users (IE vs Chrome vs Firefox vs Safari), Josh Millet and Eric Loken provide data on a skills test; they break down the results by browser and by operating system. They report the data on mean skills for Windows and Mac users; below I have made a few changes (so don't just copy-and-paste from their report!).

	Mean	Std. Dev.	N
Windows	22.83	9.62	8,558
Mac OS X	25.26	9.25	1,706

Are Windows users less skilled than Mac users? Clearly state the null hypothesis, test statistic, critical values, confidence intervals, and p-values. What do these statistics allow you conclude about differences between Mac users and Windows users?

5. Using the PUMS data in SPSS (available from Blackboard), carefully examine the question of commute times for different types of worker. Do workers with college degrees have a different commute time than workers with just high-school diplomas? (Consider whether you should restrict the data; for example should you only look at people who are 25-65? Explain.) Clearly state the null hypothesis, test statistic, critical values, confidence intervals, and p-values. Why do you think that we would find these results? What are some of the other important explanatory variables for commute time? You can provide some further empirical results.