1. Among 734 randomly selected Internet users, it was found that 340 of them use the Internet for making travel plans (based on data from a Gallup poll). Use a 0.01 significance level to test the claim that among Internet users, less than 50% use the Internet for making travel plans. (12 points)

2. In clinical experiments involving different groups of independent samples, it is important that the groups be similar in the important ways that affect the experiment. In an experiment designed to test the effectiveness of paroxetine for treating bipolar depression, subjects were measured using the Hamilton depression scale with the results given below (based on data from “Double-Blind, Placebo-Controlled Comparison of Imipramine and Paroxetine in the Treatment of Bipolar Depression,” by Nemeroff et al., American Journal of Psychiatry, Vol. 158, No 6). A higher score means a person is depressed, above 17 means the person has some form of depression.

Paroxetine treatment group  \( n = 31, \bar{x} = 18.38, \ s = 3.91 \)
Placebo Group  \( n = 41, \bar{x} = 21.57, \ s = 3.87 \)

a. Test the claim that the Paroxetine group has a lower mean score on the Hamilton scale than the Placebo group. Use a 0.05 significance level. (12 points)
3. The drug Clarinex is used to treat symptoms from allergies. In a clinical trial of this drug, 3.1% of the 1655 treated subjects experienced fatigue. Among the 1652 subjects given placebos, 1.2% experienced fatigue (based on data from Schering Corporation). Use a 0.05 significance level to test the claim that the incidence of fatigue is greater for those who use Clarinex. Also find 99% confidence interval for the difference in two proportions. What can you conclude from your confidence interval? (12 points)

4. A study was conducted of babies born to mothers who use cocaine during pregnancy. A sample of 91 babies had a mean weight of 2700 grams with a standard deviation of 645 grams (based on data from “Cognitive Outcomes of Preschool Children with Prenatal Cocaine Exposure,” by Singer et al., *Journal of the American Medical Association* Vol. 291m No 20). Find a 95% confidence interval for the mean weight of babies born to mothers who use cocaine during pregnancy. Can you conclude that the mean weight of the babies is less than 2900 grams which is the mean weight for babies born to mothers who do not use cocaine? (12 points)
5. Listed below are the heights (in inches) of mother’s and heights (in inches) of their daughters (based on data from the National Health Examinations Survey”.

**NOTE:** This is the same data set as the previous question.

<table>
<thead>
<tr>
<th>Mother’s height = Before</th>
<th>63.1</th>
<th>67.1</th>
<th>64.7</th>
<th>60.8</th>
<th>65.9</th>
<th>67.1</th>
<th>59.1</th>
<th>60.9</th>
<th>61.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daughter’s Height = After</td>
<td>58.6</td>
<td>65.7</td>
<td>65.3</td>
<td>61.0</td>
<td>65.4</td>
<td>67.4</td>
<td>60.9</td>
<td>63.1</td>
<td>62.3</td>
</tr>
</tbody>
</table>

a. Test the claim that there is no difference in the height of the mother and daughters. Use a 0.05 significance level. You may use either the p-value or traditional method. (10 points)

b. Find a 90% confidence interval for the mean difference in the mothers and daughters heights. Write a conclusion sentence. Does the interval contain zero? What is the significance of the interval containing the value of zero? (8 points)