Term Test #2, ECO220Y, January 31, 2014 SUGGESTED SOLUTIONS

(1) (a) We are 95% confident that between 10.6 and 13.4 percent of *all Canadians* in the first half of October 2013 believed that science is not yet conclusive that global warming is happening.

(b) $CI = \hat{P} \pm ME = \hat{P} \pm z_{\frac{\alpha}{2}}\sqrt{\frac{\hat{P}(1-\hat{P})}{n}} = 0.12 \pm 1.96\sqrt{\frac{0.12*0.88}{2{,}003}} = 0.12 \pm 0.014$. The summary is giving a margin of error for various proportions and hence uses the worst case scenario of a sample proportion of 0.5, which results in the highest possible margin of error: $ME = z_{\frac{\alpha}{2}}\sqrt{\frac{\hat{P}(1-\hat{P})}{n}} = 1.96\sqrt{\frac{0.5*0.5}{2{,}003}} = 0.022$. For a sample proportion of only 12% the margin of error will be considerably smaller (i.e. 1.4% as correctly calculated above).

(c)

$H_0: p = 0.5$

$H_1: p < 0.5$ (Note students may write H_1 or H_A.)

$\hat{P} = 0.47$

We can approximate the relevant sample size as 229 $\left(= 2{,}003 * \frac{4025.1}{35{,}158.3}\right)$.

Compute the P-value, which is a quantitative measure of the strength of our evidence in favor of the research hypothesis: