(NOTE: Hypothesis testing only for independent variable slopes (b1 and b2). Calculate the 95% Confidence intervals for b1 and b2.)

**3** THE FUEL CONSUMPTION CASE

Use the output in (Fig 1a) to do (1) through (6) for each of *β*0, *β*1, and *β*2 .

(Fig-1a) ***t*** Statistics and *p*-Values for Four Case Studies



**1** Find *bj*, *sbj*, and the *t* statistic for testing *H*0 : *βj* = 0 on the output and report their values. Show how *t* has been calculated by using *bj* and *sbj* .

**2** Using the *t* statistic and appropriate critical values, test *H*0 : *β1* = 0 versus *Ha* : ≠ 0 by setting a equal to .05. Which independent variables are significantly related to *y* in the model with *a* = .05?

**3** Using the *t* statistic and appropriate critical values, test *H*0 : *βj* = 0 versus *H*a : *βj* ≠ 0 by setting α equal to .01. Which independent variables are significantly related to *y* in the model with α = .01?

**4** Find the *p*-value for testing *H*0 : *βj* = 0 versus *Ha* : *βj* ≠ 0 on the output. Using the *p*-value, determine whether we can reject *H*0 by setting a equal to .10, .05, .01, and .001. What do you conclude about the significance of the independent variables in the model?

**5** Calculate the 95 percent confidence interval for *βj*. Discuss one practical application of this interval.

**6** Calculate the 99 percent confidence interval for *βj* .