Practice Quiz 8

Statistics 1000
Fall 2008 (take and self-check by Nov. 6)
Dr. Nancy Pfenning

1. (10 pts.) Number of calves sired by a sample of 10 captive Beluga whales had mean 1.5, standard deviation 1.4.

   (a) Use the fact that the t multiplier for 9 degrees of freedom is 2.26 to set up a 95% confidence interval for the mean number of calves sired by all captive Belugas.

   (b) Based on your confidence interval, is 3 a plausible value for mean number of calves sired?

   (c) Suppose someone wants to test a claim that the mean number of calves sired is less than 3. State the appropriate null and alternative hypotheses.

   (d) Calculate the test statistic, and identify it as z or t. _____

   (e) We know from part (a) that for samples of size 10, a test statistic of 2.26 may be considered large in absolute value. Based on this, we can say that our test statistic is
   (i) not large (ii) large (iii) borderline.

   (f) The p-value is (i) not small (ii) small (iii) borderline.

   (g) Which one of these is the correct conclusion?

      i. Population mean number of calves sired is proven to be 3.
      ii. Population mean number of calves sired is proven to be 1.5.
      iii. Population mean number of calves sired may be 3.
      iv. We have proven that population mean number of calves sired is less than 3.
      v. We have compelling evidence that population mean number of calves sired is less than 3.
      vi. Results are inconclusive.

   (h) If the data were used to test a claim that mean number of calves sired *differs* from 3, the p-value would be
   (i) half (ii) twice (iii) the same as the one for the test described above.