PBIO 294 in-class questions. 3 Sep 2015

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Kruschke chapter 2.

1. Consider the example of the manufactured bouncy walls that are manufactured in four discrete sizes: diameters of 1.0, 2.0, 3.0, and 4.0 (assume units are cm). The manufacturing process is quite imprecise (‘noisy’), however. Assume the noise follows a Normal distribution with some variance σ2. You sample 3 balls of diameter 1.77, 2.23, and 2.7 that were manufactured to be of the same diameter. How might you decide if the factory correctly sent three balls of size 2 vs three balls of size 1 or 3 or 4? (refer to K2.1.1 pages 20-21 for more details).

2. How would you adapt your technique from above to distinguish between the two candidate models in Figure 2.4 (K2.2 page 23)?

3. Explain why the ‘cloud’ of credible regression lines in the left side panel of Figure 2.5 (K2.3, page 26) have the characteristic shape that they do, e.g., narrow range in center of plot but broader towards edges?