Math 108
Spring 2024
Dr. Lily Yen

Quiz 1

Show all your work

Name: _____
Number: _____
Signature: _____
Score: ___/10

Problem 1: Use a permissible graphing calculator (TI83, TI83+, TI84-Plus) to evaluate the following. Round your answers to 6 decimal places.

a. $\dfrac{\sqrt{3.17}-11.8}{423.9-3.2^4} \approx$ $\boxed{-0.031\,405}$

b. $\left(\dfrac{15}{7}\right)^{2.14} - 31.4 \times \left(\dfrac{2}{11}\right)^{1.32} \approx$ $\boxed{1.800\,227}$

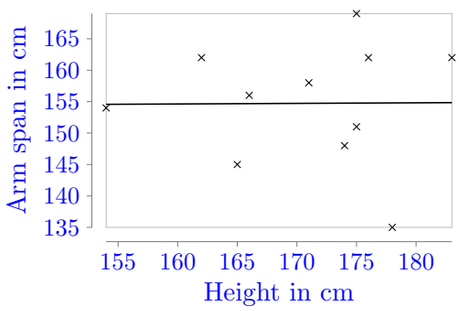
Score: /2

Problem 2: From a sample of Lily's Math 108 class, the height and arm span of each student was recorded. Below is the data set of eleven students.

Height (cm):	174	183	171	162	178	166	154	176	165	175	175
Arm span (cm):	148	162	158	162	135	156	154	162	145	169	151

Use the given data to answer the following questions:

a. Draw a scatter plot. Provide dimensions of the window and label your axes.



Score: /2

b. Use linear regression to find a model to fit your plot. Report your model to six decimal places.

$$y = 0.009\,359x + 153.128\,526$$

Score: /2

c. According to your model, what is the arm span accurate to 2 decimal places of a student with a height of 185 cm? Comment on the reliability of your answer.

If $x = 185$, then $y \approx 154.860$ cm.
Extrapolation is always dubious, and in this case the data is very scattered.

Score: /1

d. According to your model, what is the predicted height for a student with an arm span of 158 cm? Comment on the reliability of your answer.

When you are unable to see the intersection point with $y_2 = 158$ because your window is too small, you can solve by hand to get 520.490 cm.
If $y = 158$, then $y \approx 520.490$ cm. This is clearly ridiculous.

Score: /2

e. Comment on the reliability of your linear regression model relative to the scatter plot.

This data is much too scattered to make a model.

Score: /1