Name:

Math 108-01
Summer 2024
Dr. Lily Yen

Quiz Two
Show all your work

Number:
Signature:
Score: $\qquad$ / 10
Problem 1: Use a permissible graphing calculator (TI83, TI83+, TI84-Plus) to evaluate the following. Round your answers to 6 decimal places.
a. $\frac{213.9-2.3^{4}}{\sqrt{5.39}-20.8} \approx$

$$
-10.061276
$$

b. $\left(\frac{10}{3}\right)^{1.41}-12.4 \times\left(\frac{9}{11}\right)^{-1.23} \approx$

Problem 2: Shown is a sample of 10 males from a data set from kaggle.com showing height, weight, shoes size and gender of people.

| Height (cm): | 180 | 165 | 178 | 182 | 160 | 181 | 184 | 180 | 179 | 177 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Shoe size (European): | 42 | 41 | 42 | 36 | 43 | 43 | 43 | 44 | 42 | 43 |

Use the given data to answer the following questions:
a. Draw a scatter plot. Provide dimensions of the window and label your axes.


Score: $\quad / 2$
b. Use linear regression to find a model to fit your plot. Report your model to six decimal places.

$$
y=-0.337987 \times 10^{-1} x+47.868846
$$

$$
\text { Score: } \quad / 2
$$

c. According to your model, what is the shoe size accurate rounded to a whole number of a student with a height of 185 cm ? Comment on the reliability of your answer.

If $x=185$, then $y \approx 41.6161 \mathrm{~cm}$.
Extrapolation is always dubious.
Score: /1
d. According to your model, what is the predicted height for a student with a shoe size of 46 ? Comment on the reliability of your answer.
Solving $46=-0.337987 \times 10^{-1} x+47.8688$ yields $x \approx 55.2935 \mathrm{~cm}$. This is clearly ridiculous.

Score: /2
e. Comment on the reliability of your linear regression model relative to the scatter plot.

This data is not suitable for any model. It looks like three outliers and a cluster of data. Common sense dictates at least a positive slope.

