Name: _____

MATH 108
Spring 2023
HW 8: Due 03/06

"Laura, clear out the rest of my day! I have to push a boulder up a hill and then have it roll over me time and time again with no regard for my well-being."

–Princess Carolyn, BoJack Horseman

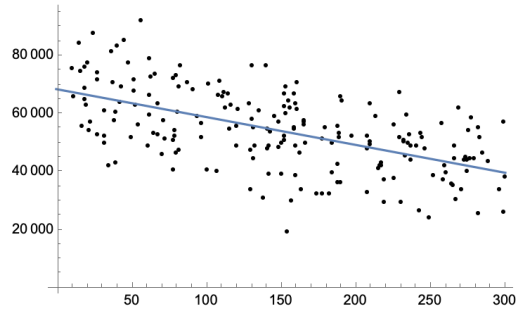
Problem 1. (10pt) Kelsey is gambling at a casino. She is playing a game where you roll two die. If you roll two 6's, you win $100. If you the dice and the numbers on both die are four or greater (but not two 6's), you win $10. If the numbers on both die are less than 3, you lose $8. Otherwise, you win nothing. You must pay $5 as a 'buy-in' each round to play. Find the amount that you win/lose 'on average.' Should one play this game?

Problem 2. (10pt) Find the least square regression line for the points: $(1,3), (3,5), (1,2), (2,2)$. Show all your work.

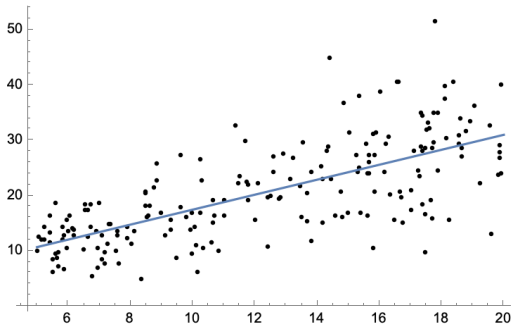
Problem 3. (10pt) Given the following information below, find the least square regression line. Show all your work.

$$
\begin{aligned}
n &= 200 \\
\overline{x} &= 4.42726, \quad \sigma_x^2 &&= 10.6639 \\
\overline{y} &= 46.5248, \quad \sigma_y^2 &&= 1053.77 \\
R &= 0.962639
\end{aligned}
$$

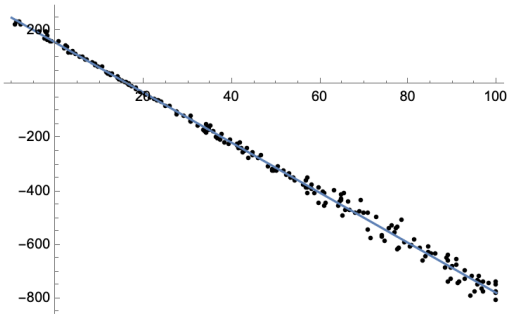
Problem 4. (10pt) Match each regression coefficient to its corresponding graph.



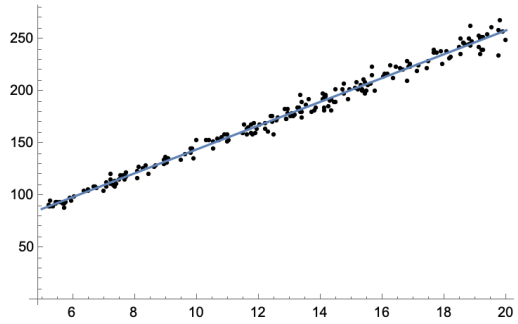
(a)



(b)



(c)



(d)

(i) _____: $R = 0.836288$

(ii) _____: $R = -0.998836$

(iii) _____: $R = 0.997066$

(iv) _____: $R = -0.759531$