Math 108-01
Summer 2025
Dr. Lily Yen

Quiz 2

Show all your work

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

Problem 1: Use a permissible graphing calculator (TI83, TI83+, TI84-Plus) to set up a table of values to estimate the instantaneous rate of change of y with respect to x for the function $f(x) = x^2 + \dfrac{3}{x}$ at $x = 4$. Round your answers to 6 decimal places. Specify your Y_1 and Y_2 as part of your steps.

Interval	$Y_2 = (Y_1 - 67/4)/(x - 4)$
3.8 to 4	7.602 631 600
3.9 to 4	7.707 692 300
3.999 to 4	7.707 692 300
4.1 to 4	7.917 073 200
4.01 to 4	7.822 968 000
4.001 to 4	7.813 550 000

$f'(4) = \frac{125}{16} = 7.8125.$

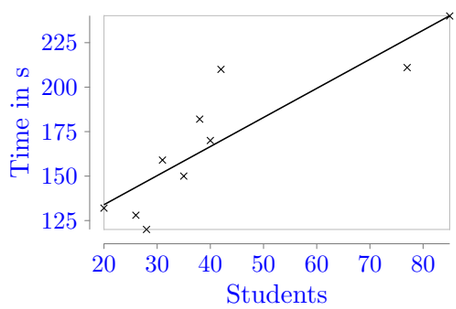
Score: /5

Problem 2: Shown is a sample of 10 classrooms at CapU during fire alarm drill week showing the class size and the number of seconds it took each class to vacate the room once the alarm started ringing.

Classroom size (students):	26	35	31	40	28	20	38	42	85	77
Time to vacate (seconds):	128	150	159	170	120	132	182	210	240	211

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.

$$y = 1.634\,822x + 101.210\,496$$

Score: /2

c. According to your model, what is the time accurate rounded to a whole number of seconds of a classroom with 34 students would take to vacate when the fire alarm starts to ring? Comment on the reliability of your answer.

If $x = 34$, then $y \approx 156.794$, so 157 s.
Interpolation is valid.

Score: /1