M131
Fixed vs Variable Cost Assignment

In economics, **fixed costs** are business expenses that are not dependent on the level of goods or services produced by the business. They tend to be time-related, such as salaries or rents being paid per month, and are often referred to as overhead costs. This is in contrast to variable costs, which are volume-related (and are paid per quantity produced).

Now much as CSUN is a university and we do not like to think of it as a business, as state support dwindles, it is becoming more like a business in the sense that we need to make ends meet.

The main tool for balancing the CSUN budget is enrollment. State appropriations and fees can be thought of as functions of enrollment.

About 95% of the funding for the CSU system comes from California's general fund and from student fees. Each full-time student (FTE) pays about $7000 in fees and the state of California pays about $4,900. So the (simplified) total funding per FTE is $11,900 and the total yearly funding for x FTEs is

$F(x) = 11{,}900x$

The estimated yearly fixed costs to run the university are about $200,000,000. This includes building maintenance, gardening, police, accounting, etc. The additional cost per FTE is $4600, which consists mostly of your teachers' salaries, but includes salaries for the library, counseling center, etc. Using the linear cost model, the total (yearly) cost C(x) for x FTEs is

$C(x) = 200{,}000{,}000 + 4600x$

Problem 1: Find the number of FTE that must be enrolled for the costs C(x) to match the funding F(x); ie find the x- value where the cost and funding lines intersect, F(x) intersects C(x) for x such that F(x) = C(x):

Problem 2: What is the dollar cost at the point where the cost is the same as the funding F(x)?

Problem 3: If enrollment is 25,000 FTE, will the revenue cover the cost to run the university? Explain why or why not.

Problem 4: If enrollment is 25,000 FTE, funding must increase to cover the costs. Assuming that the state funding remains the same (at $4900 per FTE), student fees would have to be raised. Please determine the fee increase needed to adjust to the enrollment drop.