Name: _____

MATH 101
Fall 2022
HW 19: Due 11/16

"There is no branch of mathematics, however abstract, which may not some day be applied to phenomena of the real world."
–Nikolai Lobachevsky

Problem 1. (10pt) An oil company is selling off one of its oil reserves. The amount of oil left in the storage tank in tens of thousands of gallons, O, after d days is given by $O(d) = 1600 - 133.4d$.

(a) Find and interpret the slope of $O(d)$ in the context of the problem.

(b) Find and interpret the y-intercept of $O(d)$ in the context of the problem.

(c) Find how long it will take the company to sell all the oil in the tank.

(d) If the company sells the oil for \$2.085/gallon, how much money do they make selling this reserve oil?

Problem 2. (10pt) Suppose that last year, the demand for a certain good was 185 thousand units. It is estimated that next year, the demand will be for 221 thousand units.

(a) Assuming that the change in demand is constant, find a linear function predicting the level of demand t years from now.

(b) Interpret the slope and y-intercept from your function in (a).

(c) What is your prediction for the level of demand in 5 years?

(d) Predict how many years until the demand is 400 thousand units.