

Homefun 2

I Want AROC!

MATH 150
15 points

Directions: Work in groups of 2 to 4 in class and then finish outside of class as necessary. Each group should submit **ONE** solution page for the group. (Be sure everyone's name is on it!)

The **average rate of change** (AROC) of a function f over an interval $[a, b]$ is just $\frac{f(b) - f(a)}{b - a}$, which is also the slope of the secant line joining the endpoints of the graph on that interval. It's the net change in output divided by the net change in input.

The Oregonlive page at The Oregonian tracks COVID-19 cases in Oregon in several ways. Go to <https://projects.oregonlive.com/coronavirus/> and scroll down to the "Daily new cases" chart.

1. Find the number of cases on July 1, 2020 and July 31, 2020 and compute the average rate of change in cases over that month.
2. What is the AROC from March 23, 2020 to May 15, 2020? (The period Oregon was under a stay-at-home order.)
3. Now let's do some predicting.
 - (a) Find the average rate of change from August 4 to August 5.
 - (b) On August 5, 2020, there were 280 new cases. Use the AROC from part (a) to predict the number of new cases on August 6, 2020 (one day later).
 - (c) How closely would you expect that to match the actual number of new cases on August 6, 2020?
 - (d) Now use the 280 cases on August 5 and your AROC from part (a) to predict the number of new cases on August 31, 2020. (If you change from 280 by the AROC each day, where do you end up after 26 days?)
 - (e) How closely would you expect that to match the actual number of new cases on August 31, 2020?
 - (f) Look up the actual numbers for 8/6/20 and the 8/31/20 and compare to your estimates.