In reference to the phrase ‘flatten the curve’, consider the following graphs. Let $E(t)$ be the curve that is without preventative measures. Let $P(t)$ be the curve that incorporates preventative measures.

1. Describe what is on the x-axis and the y-axis of the graph.

2. Label the following on the graph: $E'(t) = 0$, $P'(t) = 0$.

3. Compare $E(t)$ and $P(t)$ at these two points ($E'(t) = 0$ and $P'(t) = 0$). What do they tell us about the impact of preventative measures on the maximum number of cases at a time?

4. Label the following on the graph: $E''(t) = 0$, $P''(t) = 0$ (there should be two of each).

5. Compare $E'(t)$ and $P'(t)$ at the two points ($E''(t) = 0$ and $P''(t) = 0$) where $E'(t) > 0$ and $P'(t) > 0$. What is the impact of preventative measures on the maximum rate that the number of cases is increasing?

6. Mark the regions where $E''(t) > 0$, $P''(t) < 0$, $P''(t) > 0$, and $P''(t) < 0$.

7. Describe in words what is happening to the number of cases when $E''(t) > 0$ and $P''(t) > 0$.

8. Go to https://www.worldometers.info/coronavirus/country/us/ and scroll down to the graph that shows the Total Coronavirus Cases in the United States. Sketch it below. Let $C(t)$ be the total number of cases at time $t$.

9. Is $C'(t) > 0$ or $C'(t) < 0$ during February and March? What does that tell us about the number of total cases during February and March?

10. Is $C''(t) > 0$ or $C''(t) < 0$ during February and March? What does that tell us about the rate of change of the number of total cases during February and March?