

Exercise 2B. Consider a function that relates tax revenues R , in billions of dollars, to the average tax rate t such that $R = 350t - 500t^2$. Find t_1 & t_2 ?

(a) What tax rate(s) is consistent with raising tax revenues equal to \$60 billion?

(b) What tax rate(s) is consistent with raising tax revenues equal to \$61.25 billion?

(c) What tax rate is consistent with the maximum tax revenue? t^* , slope = 0

(a) $R = \$60$ billion

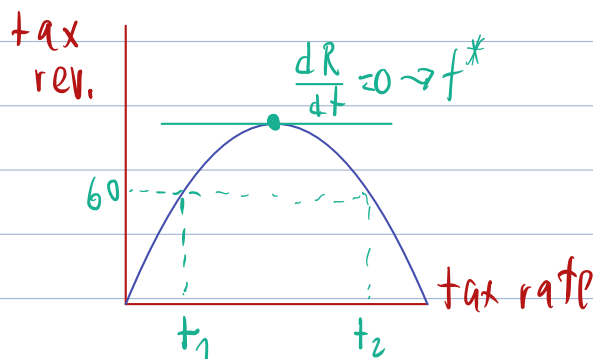
$$R = 350t - 500t^2$$

$$60 = 350t - 500t^2$$

$$500t^2 - 350t + 60 = 0$$

$$50t^2 - 35t + 6$$

$$(5t - 2)(10t - 3) \quad t = \frac{2}{5}, \frac{3}{10} \text{ or } 0.4, 0.3 \text{ or } 40\%, 30\% \quad \text{X}$$



(b) $R = \$61.25$ billion

$$61.25 = 350t - 500t^2$$

$$500t^2 - 350t + 61.25 = 0$$

$$t = \frac{7}{20} \text{ or } 0.35 \text{ or } 35\% \quad \text{X}$$

(c) Find where slope / $\frac{dR}{dt} = 0$

$$\frac{dR}{dt} = 350 - 1000t$$

$$0 = 350 - 1000t$$

$$t = \frac{350}{1000} = \frac{7}{20} \text{ or } 35\% \quad \text{X}$$