

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

(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?

$$a) \quad 60 = 350t - 500t^2$$

$$\frac{500t^2 - 350t + 60}{10} = 0$$

$$50t^2 - 35t + 6 = 0$$

$$t_1 = 0.2 \quad t_2 = 0.4$$

$$b) \quad 61.25 = 350t - 500t^2$$

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

$$t_1 = 0.35 \quad t_2 = 0.35$$

$$c) \quad \frac{\partial R}{\partial t} : 350 - 1000t = 0$$

$$350 - 1000t = 0$$

$$-1000t = -350$$

$$t^* = 0.35$$