Mathematics 122

Quiz 21 Name: Key

You must show your work to get full credit.

1. The cost of producing q widgets is

$$C(q) = 500 + 2q + \frac{4q^2}{q + 10{,}000}$$

and the widgets sell for \$2.99 each.

(a) What is the revenue function? $R(q) =$ $2.99q$

(b) What is the ~~product~~ profit function? $\pi(q) =$ $.99q - 500 - \frac{4q^2}{q+10{,}000}$

$\pi(q) = R(q) - C(q) = 2.99q - 500 - 2q - \frac{4q^2}{q+10000}$

(c) How many widgets should be sold to maximize profit? $q =$ 1528 (to the nearest widget)

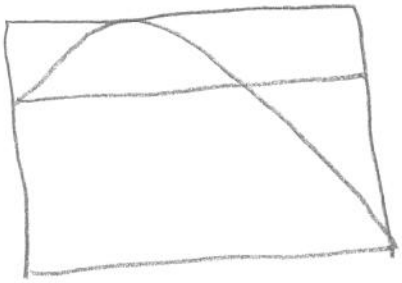
(d) What is the maximum profit? $\pi =$ \$1282.59

$Y1 = .99X - 500 - 4X^2/(X+10000)$

Xmin = 0

Xmax = 5000

ZoomFit



2nd calc 4: maximum

X = 1527.8030 (maximizer)

Y = 282.59371 (maximum)