Mathematics 122

Quiz #23 Name: Key

You must show your work to get full credit.

While you can use a calculator to do this quiz, the numbers are easy enough that no calculator is needed. And if you show work I can give partial credit.

If a calculus book is sold for p dollars, then the number sold is $N(p) = 1000 - 4p$.

1. Give a formula for the total profit, V, made by selling the book at a price of p dollars each. *Hint:* The total profit is the price of a single book times the number of books sold.

$V =$ $p(1000 - 4p)$

$V = (\text{price of a book}) \times (\text{number sold})$

$= p(1000 - 4p)$

2. At what price should the books be sold to maximize the total profit?

At maximum $\frac{dV}{dp} = 0$.

Maximizing price is $\$125$

$V = 1000p - 4p^2$

$\frac{dV}{dp} = 1000 - 8p = 0$

$8p = 1000$

$p = \frac{1000}{8} = 125$