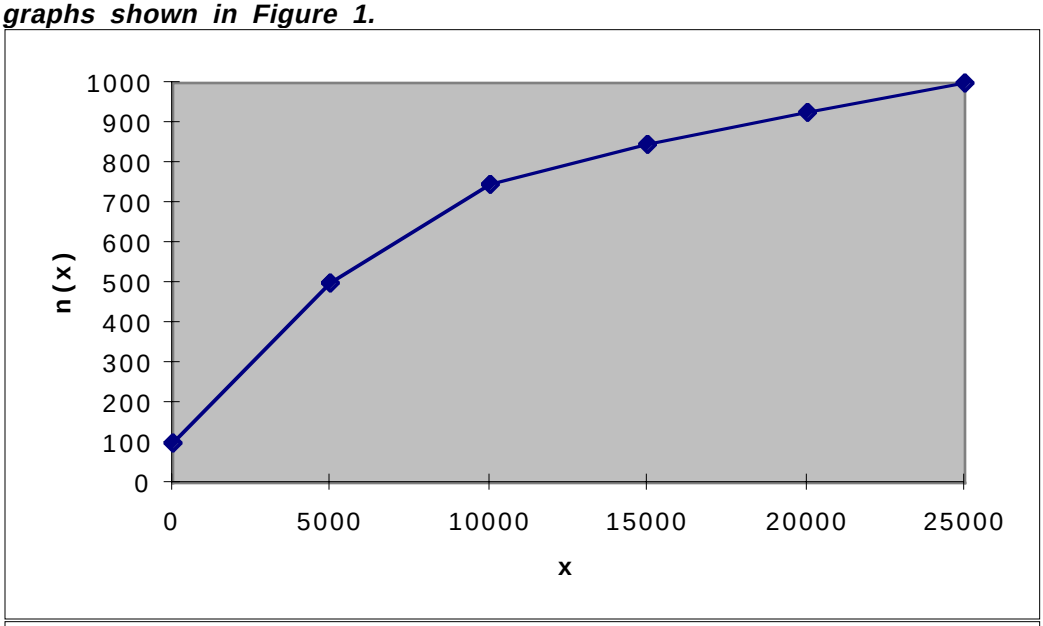
In Class Exercises (ICE) - 10/4/00

In order to cash in on Star Trek fans' need to own everything remotely connected with the show "Star Trek," a company plans to market dinner plates featuring a painting of the USS Enterprise. Let n(x) represent the number of plates that a retailer can sell when $x are spent on advertising. Let P(n) represent the money earned on the sale of n plates, before advertising costs are accounted for (i.e. the revenue). The functions n(x) and P(n) are defined by the graphs shown in Figure 1.



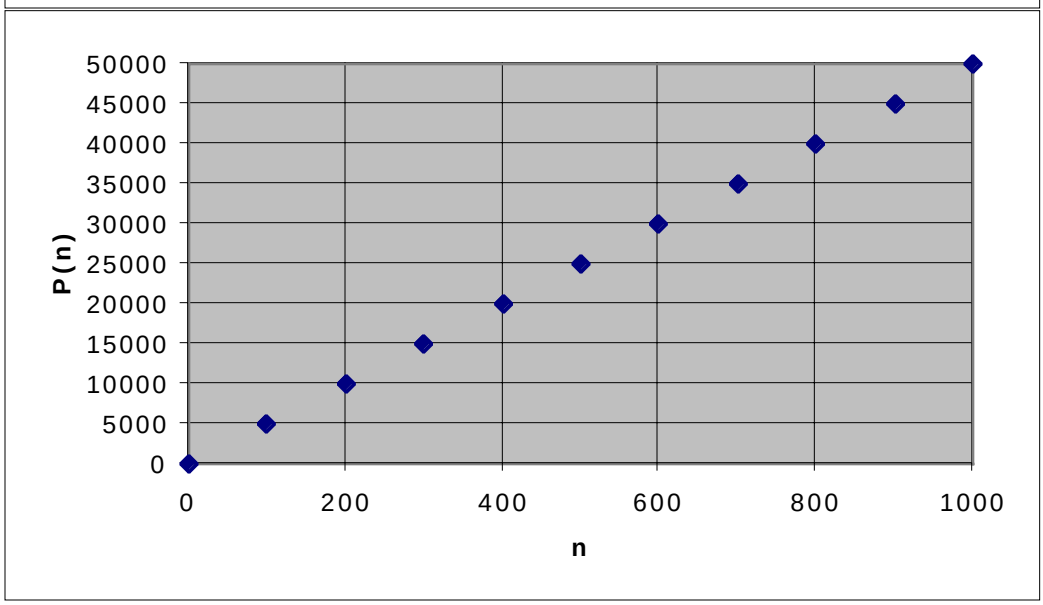


Figure 1: Functions describing sales of Star Trek plates.

- ***What is special or unusual about the average rate of change of the function P(n)? Evaluate and give a practical interpretation of the average rate of change of P(n).***

- ***Describe the appearance of the graph of n(x) in words. What does the graph tell you about the relationship between sales and advertising?***

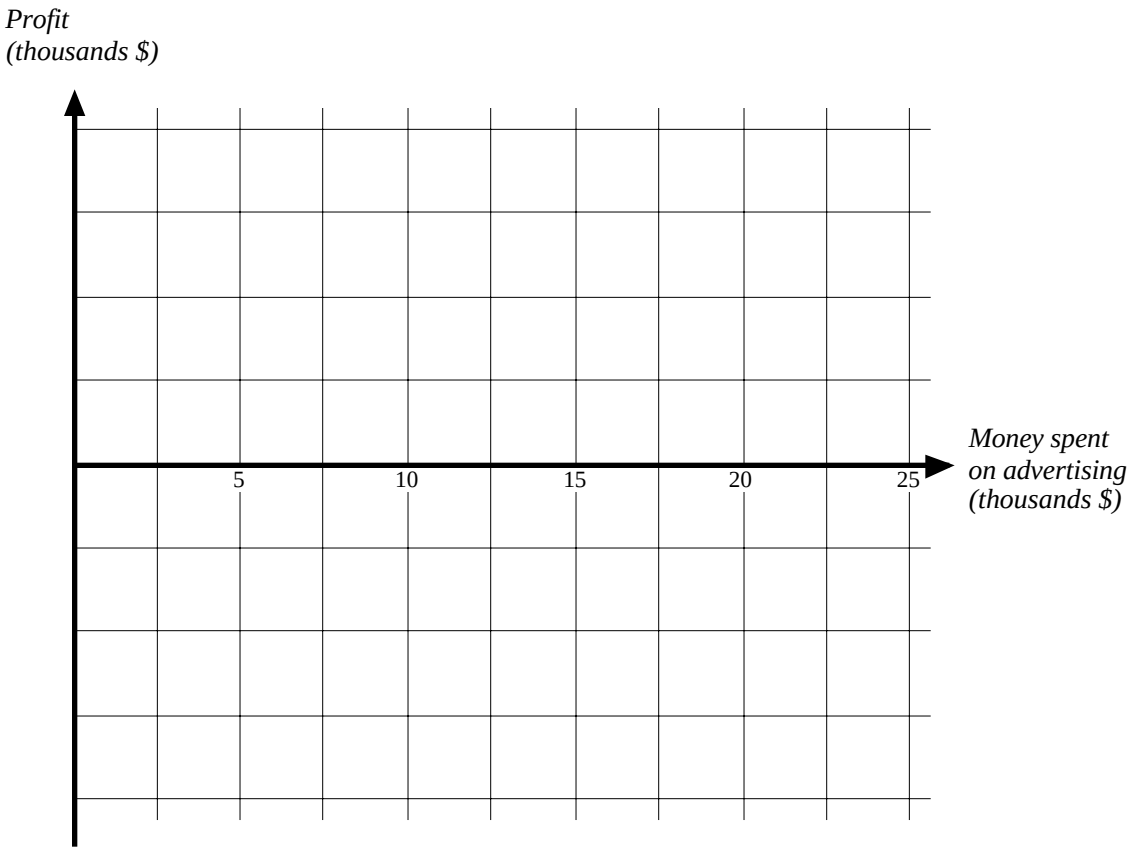
- ***Using the graphs of n(x) and P(n), complete the tables given below.***

x	0	5000	10000	15000	25000
n(x)					

n	100	500	750	850	1000
P(n)					

x	0	5000	10000	15000	25000
P(n(x))					

- ***Profit is usually defined to be the difference of revenue and cost. Use the axes given below to plot a graph of profit as a function of the amount of money spent on advertising.***



- ***Based on your calculations, how much money would you advise the company to spend on advertising?***