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- 1 There have been some changes in the situation at the stadium in problem 2.6: 27. The governing board has asked for profitability information.

It is still the case that, when tickets cost **\$10**, they have **27,000** folks show up for a game. But, owing to straightened economic times, lowering the ticket price by **\$1** only raises attendance by **1,800**.

It costs **\$6,000** to open the stadium for a game. And it costs about **\$3** per spectator for cleanup, restrooms, and liability insurance.

- (a) Write down a formula for y , the number of tickets sold, in terms of x , the price of one ticket.
 - (b) Express the total stadium operating costs in terms of the number of spectators.
 - (c) Express the total stadium operating costs in terms of the price of a single ticket.
 - (d) Write down a formula for the total profit on a game at this stadium.
 - (e) Determine the optimal ticket price, that is, the ticket price which maximizes the total profit for a game. Is this a ticket price they can actually charge?
 - (f) Write a brief paragraph for the board of directors explaining your optimal-ticket-price result in their terms. They don't want to know about all the algebra you had to hack through, but they will have questions. Anticipate their questions in your paragraph.
- 2 A rancher wants to build a pen setup like the one in the figure in problem 2.6:24. It turns out that the outer-side fencing is **\$18/foot**. This kind of fencing must also be used on the center divider. The other two dividers are to be built with fencing which costs **\$10/foot**. The rancher has **\$43,475** to spend on fencing. Determine the dimensions of the largest plot that can be fenced within these specifications. What is the area of this largest plot?