Quick Question

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2/2 points (graded)

In this quick question, we'll perform some sensitivity analysis on the connecting flights problem.

Previously, we said that American Airlines could market their fares to increase demand. It costs $200 in advertising to increase demand by one unit.

Is it worth it to market the discount fares from JFK to DFW?

- Yes. American Airlines should market the discount fares from JFK to DFW to increase demand by 50.
- Yes. American Airlines should market the discount fares from JFK to DFW to increase demand by 10.
- No. American Airlines should not market the discount fares from JFK to DFW because even though the revenue increases, it does not exceed the costs.
- **(selected)** No. American Airlines should not market the discount fares from JFK to DFW because the revenue does not increase at all by increasing the demand for these tickets. ✔

Explanation

You can answer this question without re-solving the model by noticing that we are not meeting the demand for discount fares from JFK to DFW at all. The demand could increase by 100, and we still would not offer more than 11 discount fares. Alternatively, you could change the demand for discount fares, and re-solve the model. The solution does not change, regardless of how much you increase the demand.

Is it worth it to market the regular fares from JFK to LAX?

- Yes. American Airlines should market the regular fares from JFK to LAX to increase demand by 50.
- Yes. American Airlines should market the regular fares from JFK to LAX to increase demand by 10.
- **No. American Airlines should not market the regular fares from JFK to LAX because even though the revenue increases, it does not exceed the costs.** ✔
- No. American Airlines should not market the regular fares from JFK to LAX because the revenue does not increase at all by increasing the demand for these tickets.

Explanation

In the current solution, we are meeting the demand (80) for regular tickets from JFK to LAX. If we increase the demand by 1 unit (to 81) and run Solver on it, we find that we sell 1 more JFK-LAX regular ticket, but the objective function only increases by $14, which does not exceed the cost of $200 to obtain that unit. If we wanted to check how things look if we dramatically increase demand, (say by 50), we find out that the number of JFK-LAX regular seats we allocate caps out at 91 (11 extra seats) which only increases our objective function by $154. Noting that $154 is 11 * $14, we can conclude that that our increase in revenue is consistently $14 for every unit increase of JFK-LAX regular ticket demand up to 11, and then $0 after that. Since the costs are $200 per unit increase, it is clear that we are going to lose money marketing this.

Therefore, American Airlines should not market the regular fares from JFK to LAX because even though the revenue increases, it does not exceed the costs.

Note: One can alternatively derive this $14 increase in revenue per unit increase in JFK-LAX regular demand without using Solver by noting that the sum of prices for the discount JFK-DFW and discount DFW-LAX is $414 ($224 + $190), which is $14 less thant the $428 regular JFK-LAX. So we can save $14 each time if we replace both discount connecting flight seats with the regular JFK-LAX flight (and we have 11 opportunities to do this since we allocated 11 seats to discount JFK-DFW).

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You have used 2 of 2 attempts