Problem 4: Airline overbooking

(3/3 points)

For any given flight, an airline tries to sell as many tickets as possible. Suppose that on average, 10% of ticket holders fail to show up, all independent of one another. Knowing this, an airline will sell more tickets than there are seats available (i.e., overbook the flight) and hope that there is a sufficient number of ticket holders who do not show up to compensate for its overbooking. Using the Central Limit Theorem, determine n, the maximum number of tickets an airline should sell on a flight with 300 seats so that it can be approximately 99% confident that all ticket holders who do show up will be able to board the plane. Use the de Moivre-Laplace $1/2$-correction in your calculations. *Hint:* You may have to solve numerically a quadratic equation.

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DISCUSSION

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