Problem of the Week — September 21, 2009

The capacity of Michigan Stadium is 106,201 (recent renovations reduced the capacity by 1300). At the next home game, the system for filling the stadium will be as follows. First, all people with tickets at this sold out game will line up in a single file line outside the stadium. Because she is the president, Mary Sue Coleman is first in line, and she does have a ticket. However, she enters the stadium and chooses one of the 106,201 seats at random. The second person in line then enters the stadium and sits in his assigned seat if it is not already filled. If it is filled he sits in a random empty seat. All subsequent people in line do the same — if their seats are filled they sit in a random open seat, but if their seats are available they sit in them. You are the last person in line. What is the probability that you sit in your assigned seat? Naturally, you must prove your answer.

Solutions accepted until 4 pm 10/2/09

You may submit complete solutions to Brian Jones or Marie Snipes either via email or hard copy; however, if you submit a hard copy, it must have a time-stamp (i.e. either electronic proof of time printed or a faculty signature verifying the time submitted.)