Project #3

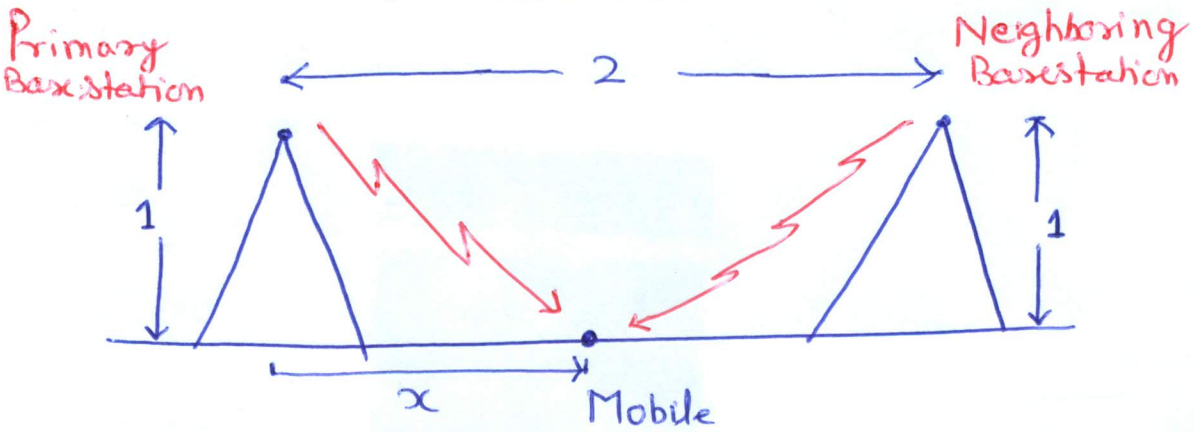

Figure shows a simplified model of a cellular wireless system (the distances shown have been scaled to make the calculations simpler). A mobile user (also called a "mobile") is located at position x (see Figure).

There are two basestation antennas, one for primary basestation and another for the neighboring basestation. Both antennas are transmitting signals to the mobile user, at equal power. However, the power of the received signal as measured by the mobile is the reciprocal of the squared distance from the associated annetenna (primary or neighboring basestation). Weare interested in finding the position of the mobile that maximizes the signal-to-interference ratio, which is the ration of the received signal power from the primary basestation to the received signal power from the neighboring basestation.

Ans: $x = 1 - \sqrt{2}$