

## Random Walks Motivated by Unit-Circle

We will present a two-dimensional circular random walk that is constructed as follows: Starting at the origin, a random angle between 0 and  $2\pi$  is chosen. One step of length  $r$  is then taken in the direction of this angle. This process is then repeated for additional steps, starting with the ending points of the previous step. The distribution for this process will be developed for the first step and will be approximated for a large number of steps. Then the probability that the random walk is within a certain radius after a large number of steps is given. From this result, we can analyze the limiting behavior as the number of steps increases. This basic idea for this problem was originally by Dr. Benko.