8. [10 points]   It turns out that there are a fair number of squirrels on the campus of Alex and Chris' university. The university occupies a triangular piece of land that is half of a 1 km by 1 km square, as shown in the figure to the right. Owing to the proximity of a local arboretum, the population of squirrels is densest at the northeast corner of campus. In addition, Alex has noted that if x is the distance measured along a line running diagonally northeast-southwest across the campus, as shown in the figure, the population density of squirrels everywhere along a line perpendicular to the diagonal is given by $p(x) = \frac{100}{x(1+x)}$ squirrels per square meter. How many squirrels are there on campus? (Note that there are 1000 meters in a kilometer.)