To test if two doubles are equal should we do:
   double a == double b
OR
   fabs(double a - double b) < epsilon. You could also do relative error instead of absolute error here.

I think a computer engineer could answer this best, but I think the latter is the correct way. However, for the tests I am going to be running, the former will work. It issue has to do with the fact that some floating point numbers cannot be represented exactly.