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It's nice to see C every now and then. I'm usually a believer in using the maximum precision available in hardware, but I'm still not sure I would recommend the use of long double, at least not as a default choice unless you really know you need the extra precision. On gcc x86, I think it gives 80 bit floating point numbers that might be stored in 96 bits or 128 bits. So it is not very memory efficient. I believe SSE2 instructions only go up to 64 bit floating point, so use of long double probably forces use of the x87 FPU and you can also pay a price in speed. And long double is not all that standard between different processors and compilers, so you lose predictability of your code's behavior on other platforms. That's a big price to pay to get the equivalent of 3.6 extra decimal digits that you might or might not need.

Other than that, everything looks good. 100/100