# PH 354 hw 2, problem 2

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The two functions differ in their results. This happens when $b^2 >> |4ac|$. In either of the two formulae, finding one of the roots involve subtracting two nearly equal quantities (Discriminant is almost $b^2$).
This results in loss of numerical precision due to round off error corresponding to that root. So in one formula if Root 1 is more accurate than Root 2, then in the other formula, Root2 is more accurate than Root 1. Now the question is which root is more accurate in which formula?
Well that depends on the sign of $b$ in $ax^2 + bx + c = 0$
When $b > 0$, $-b - \sqrt{b^2 - 4ac}$ doesn't involve subtracting two nearly equal quantities. So Root 2 of quad_solve1 and Root 1 of quad_solve2 gives accurate results.
Converse happens for $b < 0$