Homework 2

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Question 1. c

Question 3. Let A be symmetric and positive-definite, so $x^*Ax > 0$. First, note that since A is symmetrics, $a_{ii} = a_{ii}^*$, so a_{ii} is real since the only way a complex number can be equal to it's conjugate transpose is if the imaginary part is zero. Then let $x = e_i$, the ith basis vector. So $e_i^*Ae_i = e_i^TAe_i = a_{ii} > 0$, therefore the diagonals are both real and strictly postive.

Question 4.