ANSWER KEY TO MATLAB 4.1 and 4.2

4.1a
- Define your A and B matrices
- Compute the determinant using the “det()” command.
determinant of A+B = det(A+B)
determinant of A-B = det(A-B)
...same procedure with A*B, inv(A), and B’

4.1b
you should notice that one of the calculations above yields a determinant of zero. An invertible matrix’s determinant cannot be zero.

4.1c (many students lost points here)
To rephrase the question, say we are not given the matrices of A and B, but we do know what the determinants of A and B are. Which of the following matrices’ determinant are we still able to find? A+B, A-B, A*B, inv(A), and B’

det(A) and det(B) are given.

From theorems of determinants, we can recover:
-det(A)*det(B) = det(A*B).
-det(B) = det(B’)
-det(inv(A)) = 1/det(inv(A))

If you get two of the three, you receive full points. If you got one, you lose 1 point. If you get none of them or included the ones that are not recoverable, you lose two points.

4.2
If you use MATLAB to calculate det(N^100), you will get a zero as the output. However, if you calculate just det(N), you will get a tiny number. And since det(N^100) = (det(N))^100, we can conclude that the actual value for det(N^100) is close to zero, but NOT EXACTLY zero. The determinant still exist; therefore, we can further conclude that N^100 IS invertible.