

Question 2 (12 pts): +3 for expansions on each hint

Question 7 (10 pts):

- a) (6 pts) +1 for $\det A$, +1 for stating whether A is invertible, +1 for $\det B$, +1 for stating whether B is invertible, +2 for giving α that makes C invertible
- b) (4 pts) +4 for making LU matrices of C and showing that $\alpha = -5$ makes C invertible

Question 8 (12 pts):

- a) (4 pts) +2 for LU of A , +2 for LU of B
- b) (8 pts) +1 for $\det A$, +1 for $\det B$, +2 for each explanation of why B is not invertible for when $a=0$, $b=0$, and $c=0$. Explanations must include inspection of columns. Saying that when either of the values are 0 makes the determinant 0 is not enough.
- c) (5 pts) +2 for saying the matrices are bidiagonal. +3 for giving correct cost of $3(n-1)$ or $3n$.

Question 9 (10 pts):

- a) (3 pts) +3 for correct area
- b) (4 pts) +2 for correct area, +2 for correct figures
- c) (3 pts) +3 for showing that new area is the original area multiplied by $\det A$

Question 10 (8 pts): +4 for printed out MATLAB script, +4 for correct printed out output of LU matrices