MATH 307: Group Homework 11

Zhitao Chen, John Mays, Huaijin Xin, Henry Zhong

04/30/21, Dr. Guo

Problem 1

...

Problem 2

...

Problem 3

...

Problem 4

$$
\begin{aligned}
1 &= \det(I) \\
1 &= \det(QQ^T) \\
1 &= \det(Q)\det(Q^T) \\
1 &= \det(Q)\det(Q) \\
1 &= (\det(Q))^2 \implies \\
\det(Q) &= \pm 1
\end{aligned}
$$

Therefore the determinant of an orthonormal basis Q must be either 1 or -1.