

# Quiz 9

Name:

Math 54 – Professor Craig Evans  
TA: Chris Hillar

**Problem 1:** Let  $A = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ . Find an orthogonal matrix  $Q$  that diagonalizes  $A$ .

**Problem 2:** Let  $A$  and  $B$  be  $3 \times 3$  matrices such that  $\det(AB) = -3$  and  $\det(2AB^2) = -24$ . Determine  $\det(A)$  and  $\det(B)$ .

**Problem 3:** Let  $Q$  be an orthogonal  $n \times n$  matrix. Prove that  $|\det(Q)| = 1$ .