MAT 2355, Fall 2014
Assignment 4 (10 points)

Due Monday, November 10. 2:30pm.

Instructor: Mohammad Bardestani

Student Name:

Student Number:

By signing below, you declare that this work was your own and that you have not copied from any other individual or other source.
Signature _____

Important:
Late assignments will **not** be accepted; **nor** will unstapled assignments.

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Question 1– [3 points] Prove that Rot_θ has *non-zero real* eigenvalue if and only if $\text{Rot}_\theta = \pm I$.

Question 2– [3 point] Let v be a unit vector with a unit normal vector N. Let $\ell = P + [v]$ and $\mathfrak{m} = Q + [v]$ be two parallel lines. Show that

$$\Omega_\ell \circ \Omega_\mathfrak{m} = T_w, \qquad \text{where} \qquad w = 2\langle P - Q, N\rangle N.$$

Question 3– [4 points] Show that two distinct reflections Ω_ℓ and $\Omega_\mathfrak{m}$ commute (i.e., $\Omega_\ell \circ \Omega_\mathfrak{m} = \Omega_\mathfrak{m} \circ \Omega_\ell$), if and only if $\ell \perp \mathfrak{m}$.