

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:

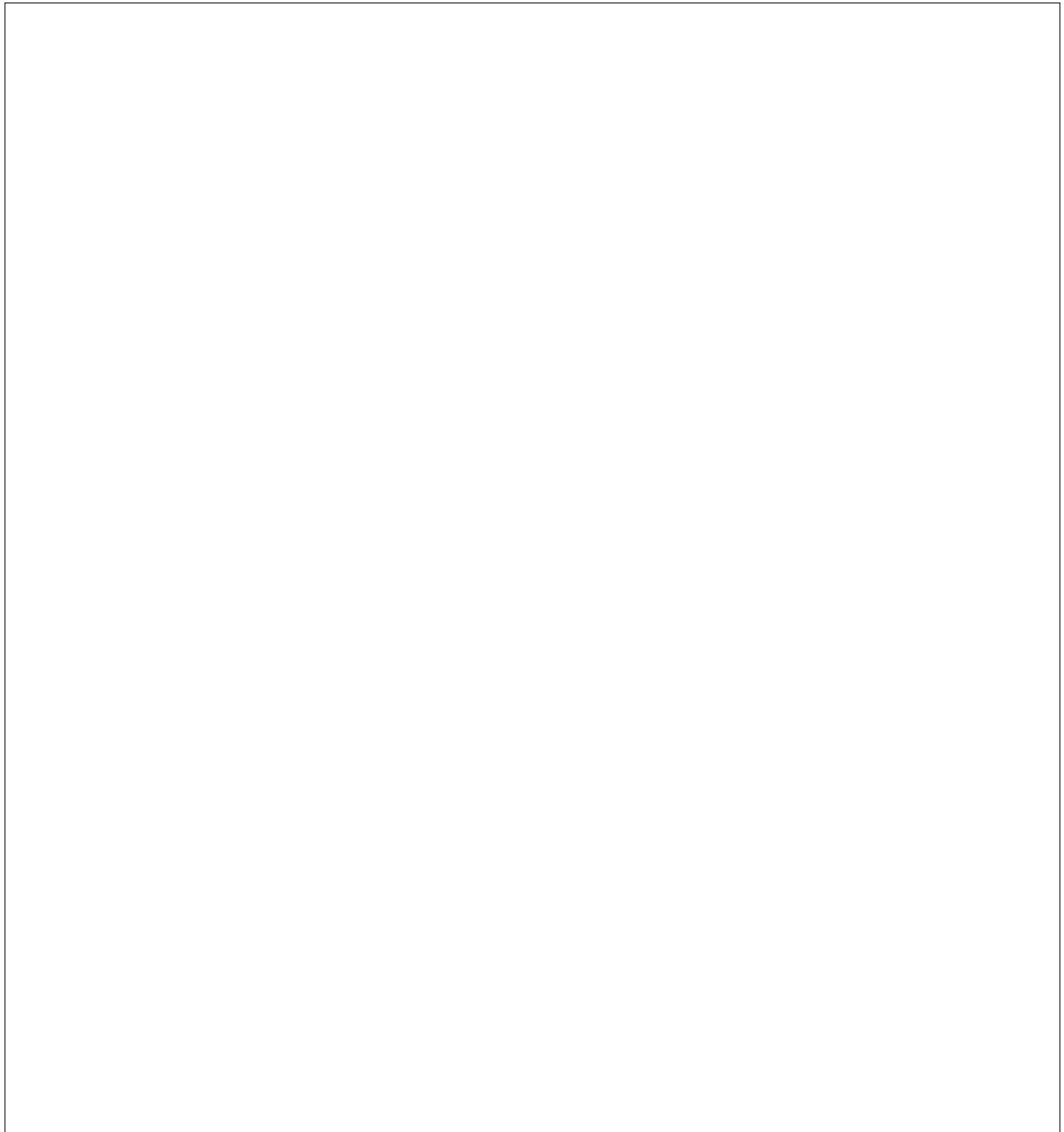
Late assignments will **not** be accepted; **nor** will unstapled assignments.



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 $m = Q + [v]$ be two parallel lines. Show that

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



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