

Due Date: June 20, 2011 Monday

NAME:.....

Ali Sinan Sertöz

STUDENT NO:.....

Math 302 Complex Analysis II – Homework 3

1	2	TOTAL
10	10	20

Please do not write anything inside the above boxes!

Check that there are 2 questions on your booklet. Write your name on top of every page. Show your work in reasonable detail. A correct answer without proper or too much reasoning may not get any credit.

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Q-1) Classify all invertible meromorphic functions from $\mathbb{C} \cup \{\infty\}$ to $\mathbb{C} \cup \{\infty\}$.

Solution:

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Q-2) Let (z_1, z_2, z_3, z_4) and (z'_1, z'_2, z'_3, z'_4) be two four-tuples of distinct points with cross-ratios of λ and λ' respectively. Show that a Möbius transformation T exists with $T(z_i) = z'_i, i = 1, \dots, 4$, if and only if $j(\lambda) = j(\lambda')$, where

$$j(\lambda) = 256 \frac{(\lambda^2 - \lambda + 1)^3}{\lambda^2(\lambda - 1)^2}.$$

Solution: