Name: _____

Please show all work and explain your answers.

1. Expand $(z - i)^{-1} + (z - 2)^{-1}$ in a Laurent series centered at the origin and valid in the annulus $\{z : 1 < |z| < 2\}$.

2. Integrate $\cot z$ around the unit circle.

3. Use Rouché's theorem to determine the number of zeros, counted with multiplicity, of $z^3 - 5z + 1$ outside the unit disc.

4. Find a fractional linear transformation that maps the unit disc to the right half-plane.

1	2	3	4	total (40)	%

Prelim. course grade: %