Time Allowed: 145 minutes **Name:**_____
Total Weight: 100 points

Multivariable and Complex Analysis Quiz VIII

SHOW ALL WORK TO RECEIVE FULL CREDIT

1. (30) Show that

$$\int_0^{2\pi} \frac{d\theta}{1+\frac{\sin\theta}{2}} = \frac{4\pi}{\sqrt{3}}$$

using residue theorem.

2. (20) Integrate counterclockwise around C and show all details.

$$\frac{15z+9}{z^3-9z} \quad C:|z|=4$$

3. (20) Integrate counterclockwise around C and show all details.

$$e^{2/z}, \quad C:|z-1-i|=2$$

4. (30) Evaluate using residue

$$\int_{-\infty}^{\infty} \frac{dx}{1+4x^4}$$