

**Multivariable and Complex Analysis Quiz V****SHOW ALL WORK TO RECEIVE FULL CREDIT**

1. (10) Express the number  $\frac{-1 + 3i}{2 + 5i}$  in the form  $a + bi$ .

2. (15) Find all solutions of the equation  $\sin z = 100$ .

3. (20) Find the corresponding analytic function  $f(z) = u(x, y) + iv(x, y)$  if

$$v(x, y) = xy$$

4. (15) Find  $\left(\frac{1}{2} + \frac{1}{2}i\right)^{10}$ .

5. (20) Find the six sixth roots of  $z = -8$  and graph these roots in the complex plane.