

Neatly show ALL of your work and CLEARLY indicate your answers. Use the back of the page if necessary. (All problems count 4 points each)

I. Perform the indicated calculation.

a.  $i(6 - 2i) + |3 - 4i| =$

b.  $\frac{2 + i}{4 - 7i} =$

II. If  $z = a + bi$  and  $w = c + di$  then show that  $\overline{zw} = \overline{z} \overline{w}$ .

III. Convert each number to the indicated form. Graph each number on the axes provided showing all parameters of the number (i.e. if  $z = a + bi$  show  $a$ ,  $b$ ,  $\arg z$ , and  $|z|$  on the graph.)

a. Convert  $z = -2i$  to polar form. (Note: You should provide an exact value for  $\theta$ )

b. Convert  $z = 2e^{(5\pi/6)i}$  to  $a + bi$  form. (Note: You should provide exact values for  $a$  and  $b$ ).

