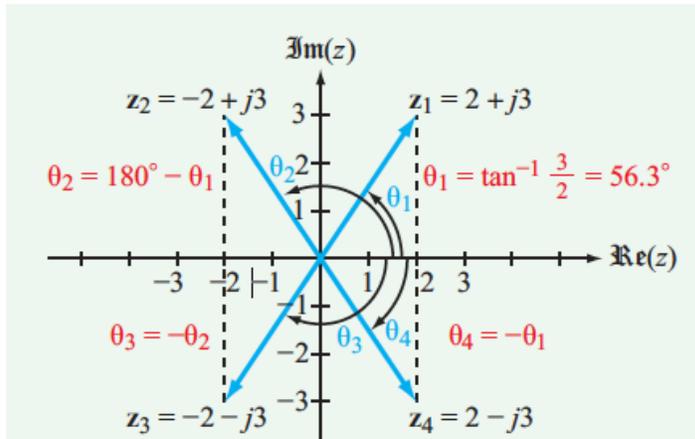


**Concept Question 7-4:** If two complex numbers have the same magnitude, are they necessarily equal to each other?



**Figure 7-4:** Complex numbers  $z_1$  to  $z_4$  have the same magnitude  $|z| = \sqrt{2^2 + 3^2} = 3.61$ , but their polar angles depend on the polarities of their real and imaginary components.

No, they are not necessarily equal. To be equal, both their magnitudes and directions have to be equal. The four complex numbers in the figure have the same magnitude, but different directions.