Complex Variables

Instructions Please write your name in the upper right-hand corner of the page. Write complete sentences to explain your solutions.

1. Determine the polar representation of the complex number $1 + i$.

2. Suppose z is a complex number such that $|z| = 2$ and $\arg z = -3\pi/2$. Express z in its standard form $x + iy$.

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3. Every complex number z has the property that $|\operatorname{Re} z| \leq |z|$. Why?

4. Suppose the complex numbers 0, z, and w represent the vertices of an isosceles right triangle. If $z = 2 + i$, find a corresponding value for w. [The answer is not unique.]