DIGITAL SIGNAL PROCESSING: COSC390

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Complex conjugation. Prove the following complex conjugation for $z_1 = x_1 + jy_1$ and $z_2 = x_2 + jy_2$:

$$\left(\frac{z_2}{z_1}\right)^* = \frac{x_1 - jy_1}{x_2 - jy_2} \tag{1}$$

HOMEWORK 1.1 QUESTION 2

Complex numbers, graphing. For the previous problem, let $x_1 = -1$, $y_1 = 1$, $x_2 = 1$, and $y_2 = -1$. Graph the numbers z_1, z_2, and z_2/z_1.

HOMEWORK 1.1 QUESTION 3

Complex numbers, polar form. Convert the following complex numbers to polar form.

1. $1 + j$
2. $2 + 2j$
3. $2 - 2j$

Notice that the second and third example are complex conjugates. What is the magnitude and phase angle of each number?