

Review of Complex Numbers

Complex Problem 1

Three complex numbers are given by $z_1 = 12 - 5i$, $z_2 = 4e^{i\pi/4}$ and $z_3 = 7e^{i\pi/6}$. Calculate the following quantities.

- a) Write z_1 in polar form.
- b) Find the real part of $z_1^* z_3$.
- c) Write $z_2 + iz_3^*$ in polar form.

Complex Problem 2

A mass of 400 gram is attached to a spring of spring constant $k = 3.6 \text{ kg/s}^2$. Initially, the spring is unstretched, but the mass has an initial velocity of -4 m/s . The motion of the spring can be described by $x = \Re(Ae^{i\omega t})$.

- a) What are the values of A (in polar form) and ω ?
- b) What is the position of the mass at $t = 1.5 \text{ s}$?