

PROBLEM:

Consider the complex signal $z(t) = Ze^{j10\pi t}$.

- Show that the first derivative of $z(t)$ with respect to time can be represented as $\dot{z}(t) = Qe^{j10\pi t}$ and determine an expression for the phasor Q in terms of Z .
- Prove that the angle of Q will always be equal to the angle of Z plus a constant, and determine the constant.
- If $Z = -3 - j4$, plot the phasors Z and Q in order to verify the angle relationship between Z and Q .