

PROBLEM:

Let $x[n]$ be the complex exponential

$$x[n] = e^{j(0.3\pi n - 0.2\pi)}$$

If we define a new signal $y[n]$ to be the result of processing $x[n]$ through a system whose z -transform operator is $\hat{H}(z) = 1 + z^{-10}$, it is possible to express $y[n]$ in the form

$$y[n] = Ae^{j(\omega_0 n + \phi)} \tag{1}$$

- Draw a (rotating) phasor diagram to illustrate how $y[n]$ is formed from $x[n]$.
- Determine the numerical values of A , ϕ and ω_0 in (1).