

Quiz #6 EE 360 Fall 2021

Name: \_\_\_\_\_

Open book and open notes

**Show your work for credit and place boxes around your answers.**

1. Find the Zero-Input Response (ZIR) of the system described by

$$y[n] - 2r \cdot \cos(\omega_0) y[n - 1] + r^2 \cdot y[n - 2] = r \cdot \sin(\omega_0) x[n - 1]$$

Where  $r$  and  $\omega_0$  are real values,  $r < 1$ , and the following states set for the output

$$y[0] = 0, y[n = -1] = -r^{-1} \cdot \sin(\omega_0), y[n = -2] = -r^{-2} \cdot \sin(2\omega_0)$$