Digital Controls EE552 Oct. 30, 2009
Quiz 2

Given: \( G(s) = \frac{1}{s^2 + 1} \), \( H(s) = \frac{1}{s} \)

Notice that there will be a zero due to \( H(s) \) pole.

1. Sketch the root locus of the system with just a P controller. (This means just the standard root locus.)

2. Show the possibilities when a PD controller \( G_c(s) = k(s + z) \) is added.

3. Show the possibilities when a PID controller \( G_c(s) = \frac{k(s + z_1)(s + z_2)}{s} \) is added. Show two plots one with real zeros and one with complex.

\[ \begin{align*}
1) & \text{ No poles at } 0, \pm j \\
3) & \text{ Complex zeros} \\
\end{align*} \]