For the following systems, given two possible sampling times of 0.05 seconds and 0.10 seconds, determine the discrete transfer functions using (a) zero-order hold, (b) the Tustin approximation, (c) a pole-zero mapping approximation for each $g(s)$. Simulate a step function using the discrete transfer functions for the ZOH. Use Matlab (c2d, step) functions to do this.

1. $g(s) = \frac{y(s)}{u(s)} = \frac{1}{(s + 3)}$
2. $g(s) = \frac{y(s)}{u(s)} = \frac{(s + 10)}{(s^2 + s)}$
3. $g(s) = \frac{y(s)}{u(s)} = \frac{1}{(s^2 + s + 3)}$