Question #1:   Consider a continuous-time filter defined by the transfer function

$$H(s) = \frac{s-2}{s^2-1} = \frac{(3/2)}{s+1} - \frac{(1/2)}{s-1}$$

(a) Compute $H(z)$, the z-transform of discrete-time filter using the discrete-time approximation for the difference equation. Assume a sampling period of $T_s = 1$. Determine the poles and zeros.

(b) Compute $G(z)$, the z-transform of discrete-time filter using the impulse invariance method. Assume a sampling period of $T_s = 1$.

(c) Compute $R(z)$, the z-transform of discrete-time filter using the bilinear transform. Assume a sampling period of $T_s = 1$. Determine the poles and zeros.