## PROBLEM:

## **Poles and Zeros** System Function, H(z)

For each H(z), determine all of the poles and zeroes, including those at z=0 and  $z=\infty$ .

(a) 
$$H(z) = \frac{1}{1 - \frac{1}{2}z^{-1}}$$

(b) 
$$H(z) = \frac{1}{1 - 2z^{-1}}$$
ANS =

(c) 
$$H(z) = \frac{1}{z+2}$$
ANS =

(d) 
$$H(z) = \frac{\frac{1}{2} - \frac{1}{2}z^{-1}}{\frac{1}{2} + z^{-1}}$$

ANS =

4. pole at 
$$z = 2$$
, zero at  $z = 1$ .

5. pole at 
$$z = 2$$
, zero at  $z = 0$ .

6. pole at 
$$z = 0$$
, zero at  $z = 2$ .

1. pole at z = -2, zero at  $z = \infty$ .

2. pole at z = -2, zero at z = 0.

3. pole at z = -2, zero at z = 1.

$$\frac{1}{2}$$
, zero at  $z = 0$ .

= 0, zero at 
$$z = 2$$
.  
=  $\frac{1}{2}$ . zero at  $z = 0$ .

$$\frac{1}{2}$$
, zero at  $z = 0$ .

$$\frac{1}{2}$$
, zero at  $z = 0$ .

7. pole at 
$$z = \frac{1}{2}$$
, zero at  $z = 0$ .

zero at 
$$z = 0$$
.

$$z = \frac{1}{2}$$
, zero at  $z = 0$ 

$$\frac{1}{2}$$
, zero at  $z = \infty$ 

e at 
$$z = \frac{1}{2}$$
, zero at  $z = 0$ 

$$=\frac{1}{2}$$
, zero at  $z=0$ .

$$=\frac{1}{2}$$
, zero at  $z=0$ .

. pole at 
$$z =$$

- 8. pole at  $z=\frac{1}{2}$ , zero at  $z=\infty$ .