PROBLEM:

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

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

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

ANS = 7

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

ANS = 5

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

ANS = 1

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

ANS = 3

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 $z = 1$.

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 $z = 2$.

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

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