PROBLEM:

Pick the correct frequency response and enter the number in the answer box:

Difference Equation or Impulse Response   **Frequency Response**

(a) $h[n] = (-\frac{1}{4})^n u[n]$

ANS =

1. $H(e^{j\hat{\omega}}) = \dfrac{1 + e^{-j\hat{\omega}}}{1 - \frac{1}{4}e^{-j\hat{\omega}}}$

(b) $h[n] = \delta[n] + \delta[n-1] + \delta[n-2]$

ANS =

2. $H(e^{j\hat{\omega}}) = \dfrac{1 + e^{-j\hat{\omega}}}{1 + \frac{1}{4}e^{-j\hat{\omega}}}$

(c) $h[n] = -4\delta[n] + 5(\frac{1}{4})^n u[n]$

ANS =

3. $H(e^{j\hat{\omega}}) = 1 + e^{-j\hat{\omega}}$

(d) $y[n] = -\frac{1}{4}y[n-1] + x[n] + x[n-1]$

ANS =

4. $H(e^{j\hat{\omega}}) = \dfrac{1}{1 - \frac{1}{4}e^{-j\hat{\omega}}}$

5. $H(e^{j\hat{\omega}}) = e^{-j1.5\hat{\omega}}\dfrac{\sin 2\hat{\omega}}{\sin(\frac{1}{2}\hat{\omega})}$

6. $H(e^{j\hat{\omega}}) = e^{-j\hat{\omega}}(1 + 2\cos(\hat{\omega}))$

7. $H(e^{j\hat{\omega}}) = \dfrac{1}{1 + \frac{1}{4}e^{-j\hat{\omega}}}$