PROBLEM:

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

Difference Equation or Impulse Response

(a) $y[n] = \frac{1}{3}y[n-1] + x[n] + x[n-1]$

ANS =

(b) $h[n] = 3\delta[n] - 2(-\frac{1}{3})^n u[n]$

ANS =

(c) $h[n] = \delta[n-1] + 2\delta[n-2] + 3\delta[n-3]$

ANS =

(d) $y[n] = -\frac{1}{3}y[n-1] + 2x[n]$

ANS =

Frequency Response

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

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

3. $H(e^{j\hat{\omega}}) = \dfrac{2}{1 + \frac{1}{3}e^{-j\hat{\omega}}}$

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

5. $H(e^{j\hat{\omega}}) = e^{-j2\hat{\omega}}(1 + 2\cos(\hat{\omega}))$

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

7. $H(e^{j\hat{\omega}}) = e^{-j\hat{\omega}} + 2e^{-j2\hat{\omega}} + 3e^{-j3\hat{\omega}}$