PROBLEM:

Pick the correct output signal and enter the number in the answer box:

Difference Equation, $H(z)$, $H(e^{j\hat{\omega}})$, or $h[n]$.

Output Signal

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

with $x[n] = u[n]$

ANS = ☐

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

with $x[n] = 100\cos(\frac{1}{3}\pi n)$

ANS = ☐

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

2. $y[n] = (-\frac{1}{4})^{n-1} u[n-1]$

3. $y[n] = -\frac{1}{4}y[n-1] + u[n-1]$

4. $y[n] = 110.9\cos(\frac{1}{3}\pi n + 0.243)$

5. $y[n] = 110.9\cos(\frac{1}{3}\pi n - 0.243)$

6. $y[n] = \delta[n-1] - \delta[n-2] + \frac{1}{4}u[n-1]$