PROBLEM:

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

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

(a) $H(z) = \dfrac{10 - 10z^{-2}}{1 - \frac{1}{2}z^{-1}}$

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

ANS = ☐

(b) $y[n] = \frac{1}{2}y[n-1] + 10x[n]$

with $x[n] = \cos(\frac{1}{2}\pi n)$

ANS = ☐

Output Signal

1. $y[n] = -10(\frac{1}{2})^{n-2}u[n-2]$

2. $y[n] = 10(\frac{1}{2})^{n}u[n]$

3. $y[n] = 8.944\cos(\frac{1}{2}\pi n - 0.464)$

4. $y[n] = e^{-j\hat{\omega}}(1 + 2\cos(\hat{\omega}))x[n]$

5. $y[n] = 8.944\cos(\frac{1}{2}\pi n + 0.464)$

6. $y[n] = 10(\frac{1}{2})^{n}u[n] + 10(\frac{1}{2})^{n-1}u[n-1]$