For our system,

\[ f(4) = x(4) + \delta(x) \]

\[ f(7) = x(7) - \delta(x) \]

\[ f(11) = x(11) + \delta(x) \]

\[ \cdots \]

For our system, we have:

\[ f(4) = x(4) + 1 + \delta(x) \]

\[ f(7) = x(7) - 1 + \delta(x) \]

\[ f(11) = x(11) + 1 + \delta(x) \]

\[ \cdots \]

Recall geometric series.
(c) \[ \begin{align*} y(t) &= g(t) - g(t) \\ g(t) &= \sum_{n=0}^{\infty} g(t-nT) \\ g(t+nT) &= g(t) \\ g(t) &= 0 \quad \text{for } t < 0 \\ g(t) &= 0 \quad \text{for } t > 0 \end{align*} \]

We want to find \( g(t) \) such that

\[ g(t) = \sum_{n=0}^{\infty} g(t-nT) \]

So, solve for \( g(t) \) such that

\[ g(t) = 3(t) \]

\[ \text{or} \quad g(t) = 8(t) \]

By convolution of \( g(t) \)
\[
\begin{align*}
\text{Thus } & g(t) = g(t) \
& = g(t) \\
& = g(t) \\
& = g(t) \\
& = g(t) \\
& = g(t) \\
\end{align*}
\]
The image contains a complex mathematical diagram and equations. The text is handwritten and includes both algebraic expressions and a flowchart. The equations appear to be related to signal processing or a similar field, involving symbols and operations typical of such domains. The flowchart suggests a process flow with inputs and outputs, indicating a possible algorithm or system model.
\[
\begin{align*}
\text{(a)} & \quad 20^2 y[n] + 1700 y[n-2] = x[n] + 20^2 x[n-1] \\
\text{(b)} & \quad H(e^{j\omega}) = \frac{1}{1 + 20 e^{-j\omega} + 1700 e^{-2j\omega}} \\
\text{(c)} & \quad \text{Substituting } y[n] \text{ we just found,}
\end{align*}
\]
So we can get $|\alpha|$ for a given $y(0)$. Let $y(t) = x(t) * h(t)$, where $h(t)$ is the output of the system. Now, the input is a sum of exponentials given by:

$$H(s) = \frac{e^{-\alpha s}}{s + \frac{\alpha}{2}}$$

When the input to $X(s)$ is $x(t)$, the output is $y(t) = x(t) * h(t)$. Think of $h(t)$ as an LTI system.

Let $y(t) = x(t) * h(t)$.

To find $y(t)$ first, find $x(t)$.
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\[ \begin{align*}
&\text{For } K = \frac{1}{16} \text{ every } x = \frac{1}{16} \text{ is an equilibrium point.}

&\text{When } x = \frac{1}{16} \text{ the system is}

&\frac{dx}{dt} = a - 2bx + c

&\text{The Jacobian matrix at } x = \frac{1}{16} \text{ is}

&J(x) = \begin{bmatrix}
-a & 2b \\
-c & a
\end{bmatrix}

&\text{The eigenvalues of } J(x) \text{ are}

&\lambda_1, \lambda_2 = \frac{a \pm \sqrt{a^2 - 4bc}}{2}

&\text{Since } |\lambda_1|, |\lambda_2| < 1 \text{ the equilibrium is stable.}

&\text{Now consider the case of } x = 0.

&\text{The system becomes}

&\frac{dx}{dt} = -a + cx

&\text{The eigenvalue of the system is}

&\lambda = c

&\text{Since } c < 0 \text{ the equilibrium at } x = 0 \text{ is stable.}

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\[ \begin{align*}
&\text{Consider the case } x = N, \quad N > 0.

&\text{The system becomes}

&\frac{dx}{dt} = a - 2bx + c

&\text{The eigenvalues of the system are}

&\lambda_1, \lambda_2 = \frac{a \pm \sqrt{a^2 - 4bc}}{2}

&\text{Since } |\lambda_1|, |\lambda_2| < 1 \text{ the equilibrium is stable.}

&\text{Thus, the system is stable for all } x \geq 0.

\]
Note that the power is the same as in part A.

\[
\text{Power} = \frac{2}{T}
\]

\[
\frac{\mu (1-z_2 k)}{k (1-z_1 k)} + \frac{\mu (1-z_3 k)}{k (1-z_1 k)} = \\
\frac{\mu (1-z_2 k)}{k (1-z_1 k)} + \frac{\mu (1-z_3 k)}{k (1-z_1 k)} = \\
60 \int_{120}^{120} \cos (120 t) \, dt = 60 \int_{120}^{120} \cos (120 t) \, dt
\]

\( \alpha_k = -\frac{120}{120} \int_{120}^{120} \cos (120 t) \, dt = 0 \)
In simple closed form, so this is ok.

\[ \frac{1}{2} \left( \frac{1-2k}{1} + \frac{1+2k}{1} \right) \cdot \frac{1}{1+\frac{12k^2}{(1-2k)(1-12k^2)}} \left( \frac{120n + 2k}{1} \right)^{\frac{120n}{1}} = \text{Power} \]

So, \( k \leq 1 \) is ok.

\[ \frac{1}{2} \left( \frac{1-2k}{1} + \frac{1+2k}{1} \right) \cdot \frac{1}{1+\frac{12k^2}{(1-2k)(1-12k^2)}} \left( \frac{120n + 2k}{1} \right)^{\frac{120n}{1}} = \text{Power} \]

The transfer function of \( H(t) \) is

\( \mathcal{L}^{-1} \{ H(t) \} = \frac{X^4(t) \cdot \frac{1}{4}}{p^2} \)