What is the response \( x(t) \)?

1) Free Body Diagram

\[
\begin{align*}
\sum F_x &= -kx + \text{psinwt} \\
\sum \text{forces in the x-direction} &= m\ddot{x} = -kx + \text{psinwt}
\end{align*}
\]

Then employing Newton's law of motion

\[
\sum m\ddot{x} = \text{sum of forces in the x-direction}
\]

\[
m\ddot{x} = -kx + \text{psinwt}
\]

\[
\boxed{m\ddot{x} + kx = \text{psinwt}} \quad \text{equation of motion}
\]

2) Laplace transformation of the equation (Noting that \( x(0) = 0 \) and \( \dot{x}(0) = 0 \))

\[
\mathcal{L}[m\ddot{x} + kx] = \mathcal{L}[\text{psinwt}]
\]

\[
(m^2s^2 + ks)X(s) = P \cdot \frac{\omega}{s^2 + \omega^2}
\]

Substituting the given numerical values, we get...