

$$\begin{aligned}
1 - \int_a^b [E(x, t)]^2 dx &= 1 - \int_a^b P(u(t)|x)H(t|x) dx \\
&= 1 - \int_a^b dx \\
&= 1 - A \int_a^b \frac{mw}{2\pi\hbar} e^{\frac{-mw^2}{2\hbar}x^2} dx \\
&= 1 - A \sqrt{\frac{mw}{2\pi\hbar}} \int_a^b e^{\frac{-mw^2}{2\hbar}x^2} dx
\end{aligned}$$

For

$$V(x) = \frac{1}{2}mw^2x^2$$

Missing equation corrected:

$$E = \frac{1}{2}mw^2$$

For

$$\hbar\omega = \alpha$$

$$\Rightarrow 1 - \int_a^b [\Phi(u(t)|x)]^2 dx \approx 0.5$$

Error Corrections

- Changed “ to “ to properly display the mathematical operator in text mode within a math environment.
- Corrected ‘da’ to ‘dx’ to match the variable of integration with the rest of the document.
- Added a missing equation to provide clarity and correct understanding of the physical concepts being referred to. The correction includes specifying that E represents energy and correctly using w for omega, ensuring consistency in symbol usage:

$$E = \frac{1}{2}mw^2$$