$$X_{kj} = \int_{-\infty}^{\infty} \psi_k \, x \, \psi_j \, dx$$

$$P_{kj} = \int_{-\infty}^{\infty} \psi_k \left(-i\hbar \frac{d}{dx} \right) \psi_j \, dx$$

$$H = \frac{P^2}{2m} + \frac{1}{2} m\omega^2 X^2$$