$\Rightarrow$

$$[A,B]=AB-BA \tag{1}$$

$$[x,p]\psi=(xp-px)\psi=-i\hbar[x\frac{\partial}{\partial x}\psi-\frac{\partial}{\partial x}(x\psi)]=i\hbar\psi \tag{2}$$

$$\psi(x)=x\psi\psi(p)=p\psi \tag{3}$$

$\hat{O}=$
$\sum_i \phi_i\phi_i\hat{O}\sum_j \phi_j\phi_j$
$=$
$\sum_{ij}\phi_i\phi_i\hat{O}\phi_j\phi_j$
$=$
$\sum_{ij}\phi_i\hat{O}\phi_j\phi_i\phi_j$
$=$
$\sum_{ij}O_{ij}\phi_i\phi_j$
$\psi\psi$
$\mathbf{x}\frac{\mathbf{p}}{dt\mathbf{F}=\frac{d\mathbf{p}}{dt}}$

$$\frac{d\phi}{dt}=\frac{1}{i\hbar}[\frac{\mathbf{p}^2}{2m}+V(\mathbf{x})]\phi \tag{4}$$

$\mathbf{x}\frac{}{dt=\frac{d\psi\mathbf{x}\psi}{dt}=\frac{d\psi}{dt}\mathbf{x}\psi+\psi\mathbf{x}\frac{d\psi}{dt}=-\frac{1}{i\hbar}\psi[\frac{\mathbf{p}^2}{2m}+V(\mathbf{x})]\mathbf{x}\psi+\psi\mathbf{x}\frac{1}{i\hbar}[\frac{\mathbf{p}^2}{2m}+V(\mathbf{x})]\psi=-\frac{1}{i\hbar}(\frac{\mathbf{p}^2}{2m}\mathbf{x}-\mathbf{x}\frac{\mathbf{p}^2}{2m})\psi=-\frac{1}{2mi\hbar}\psi[\mathbf{p}^2,\mathbf{x}]\psi=-\frac{1}{2mi\hbar}\psi 2\mathbf{p}[\mathbf{p},\mathbf{x}]\psi=\frac{1}{m}\phi\mathbf{p}\phi=\mathbf{p}}$

$\mathbf{p}\frac{}{dt=\frac{d\psi\mathbf{p}\psi}{dt}=\frac{d\psi}{dt}\mathbf{p}\psi+\psi\mathbf{p}\frac{d\psi}{dt}=-\frac{1}{i\hbar}\psi[\frac{\mathbf{p}^2}{2m}+V(\mathbf{x})]\mathbf{p}\psi+\psi\mathbf{p}\frac{1}{i\hbar}[\frac{\mathbf{p}^2}{2m}+V(\mathbf{x})]\psi=-\frac{1}{i\hbar}\psi[V(\mathbf{x}),\mathbf{p}]\phi=-\frac{1}{i\hbar}\phi i\hbar\frac{\partial V(\mathbf{X})}{\partial\mathbf{X}}\phi=\phi[-\frac{\partial V(\mathbf{X})}{\partial\mathbf{X}}]\phi=\mathbf{F}}$

$\mathbf{xp}$

$\psi=$
$[V(x),-i\hbar\frac{\partial}{\partial\mathbf{x}}]\psi$
$=$
$-i\hbar V(x)\frac{\partial}{\partial\mathbf{x}}+$
$i\hbar\frac{\partial}{\partial\mathbf{x}}[V(\mathbf{x})\psi]$
$=$
$-i\hbar V(x)\frac{\partial}{\partial\mathbf{x}}+$
$i\hbar\frac{\partial V(\mathbf{x})}{\partial\mathbf{x}}\psi+$
$i\hbar V(\mathbf{x})\frac{\partial\psi}{\partial\mathbf{x}}$
$=$
$i\hbar\frac{\partial V(\mathbf{x})}{\partial\mathbf{x}}\psi$
$\{H\ \psi_i=$
$E_i\psi_i$
$\psi=$
$\sum_i c_i\psi_i$
$\Rightarrow$
$\psi H\psi=$
$\sum_i c_i^*\psi_i H\sum_j c_j\psi_j$
$=$
$\sum_{ij}c_i^*c_jE_j\delta_{ij}=$
$\sum_i c_i^*c_iE_i\geq$
$\sum_i c_i^*c_jE_{ij}=$
E_{ij}

$$H\psi_i=E_i\psi_iH=H^{(0)}+\lambda H^{(1)} \tag{5}$$

$\{\ \psi_i=$
$\psi_i^{(0)}+$
$\lambda\psi_i^{(1)}$
$E_i=$
$E_i^{(0)}+$
$\lambda E_i^{(1)}$
$\Rightarrow$
$(H^{(0)}+$
$\lambda H^{(1)})(\psi_i^{(0)}+$
$\lambda\psi_i^{(0)})=$
$(E_i^{(0)}+$
$\lambda E_i^{(1)})(\psi_i^{(0)}+$
$\lambda\psi_i^{(1)})$
$\Rightarrow$
$\{(\ H^{(0)}-$
$E_i^{(0)})\psi_i^{(0)}=$
0
$(H^{(0)}-$
$E_i^{(0)})\psi_i^{(1)}+$
$(H^{(1)}-$