5 Summary of Dirac's notation:

	Normal 3D space	Hilbert Space
Vectors	$\vec{i}$	$\vert\psi\rangle$
Dual Space	$\vec{i}^{\dagger}$	$\langle\psi\vert$
Vector representations	$\vec{r} = a\hat{i} + b\hat{j} + c\hat{k}$	$\vert\psi\rangle = \{\sum_{l=1}^{n} \vert l\rangle \langle l\vert\} \vert\psi\rangle$
		OR
		$\int dx \vert x\rangle \langle x \vert \psi\rangle$
	$\vec{r} \equiv \begin{pmatrix} a \\ b \\ c \end{pmatrix} \equiv \begin{pmatrix} \vec{i}^{\dagger}\vec{r} \\ \vec{j}^{\dagger}\vec{r} \\ \vec{k}^{\dagger}\vec{r} \end{pmatrix}$	$\vert\psi\rangle \equiv \begin{pmatrix} \vdots \\ \langle x_1 \vert \psi\rangle \\ \langle x_2 \vert \psi\rangle \\ \langle x_3 \vert \psi\rangle \\ \vdots \end{pmatrix}$
Matrix representations	$A \equiv \sum_{i=1}^{3} \sum_{j=1}^{3} A_{i,j} \vec{i}\vec{j}^{\dagger}$	$A \equiv \sum_{i,j} \vert i\rangle \langle j\vert A_{i,j}$
	$= \begin{pmatrix} A_{1,1} & A_{1,2} & A_{1,3} \\ A_{2,1} & A_{2,2} & A_{2,3} \\ A_{3,1} & A_{3,2} & A_{3,3} \end{pmatrix}$	A matrix with matrix element $A_{i,j}$
	$= \begin{pmatrix} \vec{i}^{\dagger}A\vec{i} & \vec{i}^{\dagger}A\vec{j} & \vec{i}^{\dagger}A\vec{k} \\ \vec{j}^{\dagger}A\vec{i} & \vec{j}^{\dagger}A\vec{j} & \vec{j}^{\dagger}A\vec{k} \\ \vec{k}^{\dagger}A\vec{i} & \vec{k}^{\dagger}A\vec{j} & \vec{k}^{\dagger}A\vec{k} \end{pmatrix}$	$A_{i,j} = \langle i\vert A \vert j\rangle$

	Normal 3D space	Hilbert Space
Vectors	$\vec{i}$	$\|\psi\rangle$
Orthonormality of the vector space	$\vec{i}^{\dagger}\vec{j} = \delta_{i,j}$	$\langle i \|j\rangle = \delta_{i,j}$
		$\langle x \|x'\rangle = \delta(x - x')$

