[1.1] $\{\langle A| + \langle B|\}|C\rangle \overset{(2)}{=} \langle C|\{|A\rangle + |B\rangle\}^{\dagger}\rangle^{*} \overset{(1)}{=} \left(\langle C|A\rangle + \langle C|B\rangle\right)^{*}$

$\overset{\star}{=} \langle C|A\rangle^{*} + \langle C|B\rangle^{*} = \langle A|C\rangle + \langle B|C\rangle$ ✓

$\star$ $\left[(a+bi)+(c+di)\right]^{*} = \left[(a+c)+(b+d)i\right]^{*} = (a+c)-(b+d)i = (a-bi)+(c-di)$

$= (a+bi)^{*} + (c+di)^{*}$