1.19 $S_x = \frac{\hbar}{2}\left(|+\rangle\langle -| + |-\rangle\langle +|\right)$, $S_y = \frac{i\hbar}{2}\left(-|+\rangle\langle -| + |-\rangle\langle +|\right)$

$S_x^2 = \left(\frac{\hbar}{2}\right)^2\left(|+\rangle\langle +| + |-\rangle\langle -|\right)$, $S_y^2 = \left(\frac{\hbar}{2}\right)^2\left(-|+\rangle\langle +| + |-\rangle\langle -|\right)$

$[S_x, S_y] = i\hbar S_z$

$\langle S_x \rangle = \langle + | S_x | + \rangle = 0 \qquad \langle S_y \rangle = 0$

$\langle S_x^2 \rangle = \left(\frac{\hbar}{2}\right)^2 \quad , \quad \langle S_y \rangle = \left(\frac{\hbar}{2}\right)^2$

$\langle (S_x)^2 \rangle = \langle (S_y)^2 \rangle = \left(\frac{\hbar}{2}\right)^2$

$\langle [S_x, S_y] \rangle = \langle i\hbar S_z \rangle = i\hbar\left[\frac{\hbar}{2}(1-1)\right] = 0$

So

$\left(\frac{\hbar}{2}\right)^2\left(\frac{\hbar}{2}\right)^2 \geq 0$

for the $S_x +$ state, $\langle (S_x)^2 \rangle = 0$

So $\quad 0 \cdot \langle (S_y)^2 \rangle \geq \frac{1}{4}\left|\langle [S_x S_y] \rangle\right|^2 = 0$

i.e. $0 \geq 0$, trivial. There is no uncertainty in this state since the spin is measured to be in the $S_x +$ direction. Measuring the $S_y$ state is merely a projection of the $S_x +$ state onto the $S_y$ basis.