

$$\sin 25^\circ \cos 115^\circ = \frac{1}{2}(\sin(40^\circ) - 1)$$

$$\begin{aligned}\sin 25^\circ \cos 115^\circ &= \frac{1}{2}(\sin(25^\circ - 115^\circ) + \sin(25^\circ + 115^\circ)) = \frac{1}{2}(\sin(-90^\circ) + \sin(140^\circ)) \\ &= \frac{1}{2}(\sin(140^\circ) - 1) = \frac{1}{2}(\sin(180^\circ - 40^\circ) - 1) = \frac{1}{2}(\sin(40^\circ) - 1)\end{aligned}$$

q.e.d.