Proof Division of Fractions

Prove: $\frac{a}{b} \div \frac{c}{d} = \frac{ad}{bc}$

STATEMENTS	REASONS
$\frac{a}{b} \div \frac{c}{d} = \frac{a/b}{c/d}$	**Rewrite division as a complex fraction**
$\frac{d}{c} \in$ Real Numbers	**Multiplicative Inverse**
$\frac{\frac{a}{b}}{\frac{c}{d}} * 1 = \frac{\frac{a}{b}}{\frac{c}{d}} * \frac{\frac{d}{c}}{\frac{d}{c}}$	**Multiplication by 1/Substitution**
$\frac{\frac{a}{b}}{\frac{c}{d}} * \frac{\frac{d}{c}}{\frac{d}{c}} = \frac{\frac{ad}{bc}}{1}$	**Multiplicative Inverse**
$\frac{\frac{ad}{bc}}{1} = \frac{ad}{bc}$	**Identity Multiplication**
$\frac{a}{b} \div \frac{c}{d} = \frac{ad}{bc}$	**Transitive Property**