**Theorem 24:** For any 2×2 matrices: A=, B=, and C= show:

*i.* (AB)C = A(BC)

*ii.* A+B = B+A

*iii.* A(B+C) = AB+AC

*iv.* A⁻¹ = if a₁₁a₂₂**−**a₁₂a₂₁≠0

\**i-iv.* will hold for any matrices for which the required operations are defined.

Proof:

I,

=

Therefore, (AB)C = A(BC)

II,

Therefore, A + B = B + A

III,

BC =

Therefore, A( B+ C ) = AB + AC.

IV,

Now,

Therefore, AR = I then R is A⁻¹ if .

End of proof.