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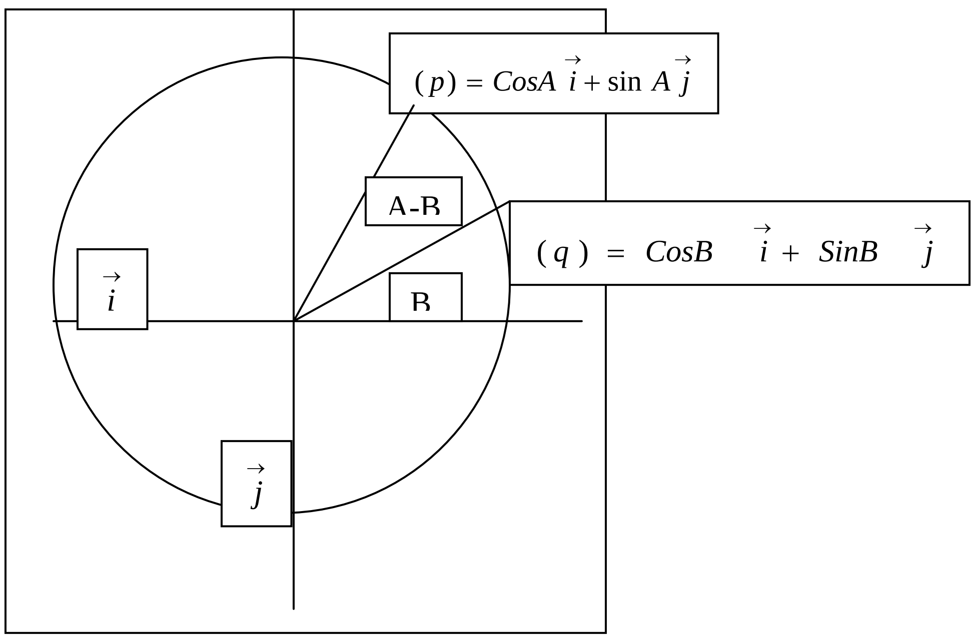
A nice proof for Cos (A-B) using vectors.

This proof uses the Scalar product to find an expression for Cos (A-B).

We use the fact that if $\vec{a},\vec{b}$ are vectors that

(1) $\vec{a}.\vec{b} = |a||b|Cos\theta$ (2) and if $\vec{a} = ai + \vec{b}j, \vec{b} = c\vec{i} + d\vec{j} \Rightarrow \vec{a}.\vec{b} = ac + bd$



The Proof goes as follows $\vec{p}$ and $\vec{q}$ are two vectors as shown on the unit circle this means that

$|\vec{p}| = |\vec{q}| = 1$. **Just write out the Scalar Product of p and q twice.**

$\vec{p}.\vec{q} = |p||q|Cos(A-B) = 1.1.Cos(A-B) = Cos(A-B)$

$\vec{p}.\vec{q} = CosACosB + SinASinB \Rightarrow Cos(A-B) = CosACosB + SinASinB$

To Find Cos(A+B) just replace B by –B.