Questions (5 pts):

Consider operators A, B, and C as well as a complex number $\alpha$ and the bra $\langle \psi |$. What kind of an object (bra, ket or operator) is the following:

(a) $\langle \psi | AB \alpha$

(b) $|\psi\rangle \langle \varphi |$

Find the Hermitian conjugate of these objects.