Quiz nr. 3: Projections

NAME: ....

Suppose $P \neq Q$ are two (non necessarily orthogonal!) projections onto the same subspace W of the vector space V. For each of the following statement decide if it *surely* holds, *surely* does not hold, or if it can both hold or not hold depending on the actual example.

	Yes	No	Depends
$P = 0$			
$P = I$			
$PQ = 0$			
$PQ = P$			
$PQ = Q$			
$\mathrm{Ker}(Q - P) = \mathrm{Ker}(I - P)$			
$(P + Q)(P - Q) = 0$			
$(P - Q)(P + Q) = 0$			

[8 right answers $= 5$ points, $7 = 4$ points, $6 = 3$ points, ...]