

Inference in Predicate Logic

Classwork

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1. Warm up

“Arthur is a raven who is not black. Therefore not all ravens are black.”

For consistency:

I (Ravens)

R = ... is a raven

B = ... is black

a = ... arthur (a raven)

2. A question of European identity

“All Flemish are from Belgium. All Belgians are European. Therefore All Flemish are European.”

3. A choice exists

$\forall x [Fx] : \exists x [Fx \vee Gx]$

4. An example to them all

$\exists x [Px \rightarrow Qx], \forall x [Px] : \exists x [Qx]$

5. Be Careful

$\forall x [Fx \rightarrow (Hx \& Jx)] \forall x [\sim(Hx \& Jx)] : \forall x [\sim Fx]$