First Order Theories - The Theory of Equality

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22 February 2013



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- (A3.) $(\forall x)(\forall y)(\forall z) (x = y) \land (y = z) \rightarrow (x = z).$
- $(\mathcal{A}4.) \ (\forall \overline{x})(\forall \overline{y}) \ (\wedge_{i=1}^n (x_i = y_i)) \to [f(\overline{x}) = f(\overline{y})].$

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(i) A axiom schema stands for a set of axioms, each an instantiation of the parameters.

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Note

- (i) A axiom schema stands for a set of axioms, each an instantiation of the parameters.
- (ii) The theory of equality is undecidable.

Example

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Is the formula F : $(a = b) \land (b = c) \rightarrow g(f(a), b) = g(f(c), a)$ valid?