

Skolemizacija

primeri

$$1. \quad \underline{(\exists x)} (\forall y) \underline{P(x, y)} \rightsquigarrow (\forall y) P(c, y)$$

$$2. \quad (\forall x) (\underline{\exists y}) \underline{Q(x, y)} \rightsquigarrow (\forall x) Q(x, f(x))$$

$$3. \quad \underline{(\exists u)} (\forall x) (\exists y) (\exists v) (\forall z) (\exists t) (P(\underline{u}, x, y) \wedge P(v, x, z) \Rightarrow P(y, z, t))$$

$$[u \mapsto c]$$

$$(\forall x) (\underline{\exists y}) (\underline{\exists v}) (\forall z) (\exists t) (P(c, x, \underline{y}) \wedge P(\underline{v}, x, z) \Rightarrow P(\underline{y}, z, t))$$

$$[y \mapsto f(x)] [v \mapsto g(x)]$$

$$(\forall x) (\forall z) (\underline{\exists t}) (P(c, x, f(x)) \wedge P(g(x), x, z) \Rightarrow P(f(x), z, \underline{t}))$$

$$[t \mapsto h(x, z)]$$

$$(\forall x) (\forall z) (P(c, x, f(x)) \wedge P(g(x), x, z) \Rightarrow P(f(x), z, h(x, z)))$$

KLAUZALNA FORMA

Primer Transformisati formulu F u klauzalnu formu

$$F = (\forall x) (\exists y) P(x, y) \Rightarrow \neg ((\exists x) Q(x) \vee (\forall x) (\forall y) \neg P(x, y))$$

$$F \equiv \neg (\forall x) (\forall y) P(x, y) \vee \neg ((\exists x) Q(x) \vee (\forall x) (\forall y) \neg P(x, y))$$

$$\equiv (\exists x) (\exists y) \neg P(x, y) \vee (\neg (\exists x) Q(x) \wedge \neg (\forall x) (\forall y) \neg P(x, y))$$

$$\equiv (\exists x) (\exists y) \neg P(x, y) \vee (\underbrace{(\forall x) \neg Q(x)}_{[x \mapsto z]} \wedge \underbrace{(\exists x) (\exists y) P(x, y)}_{[x \mapsto u, y \mapsto v]})$$

$$\equiv (\exists x)(\exists y) \neg P(x,y) \vee (\forall z) \neg Q(z) \wedge (\exists u)(\exists v) P(u,v)$$

$$\equiv (\exists x)(\exists y) \neg P(x,y) \vee (\forall z) (\neg Q(z) \wedge \exists u \exists v P(u,v))$$

$$\equiv \exists x \exists y \neg P(x,y) \vee (\forall z) (\exists u)(\exists v) (\neg Q(z) \wedge P(u,v))$$

$$\equiv (\exists x)(\exists y) (\neg P(x,y) \vee \forall z \exists u \exists v (\neg Q(z) \wedge P(u,v)))$$

$$\equiv (\exists x)(\exists y) (\forall z) (\exists u)(\exists v) (\neg P(x,y) \vee (\neg Q(z) \wedge P(u,v))) \text{ prenex}$$

$$\equiv \exists x \exists y \forall z \exists u \exists v ((\neg P(x,y) \vee \neg Q(z)) \wedge (\neg P(x,y) \vee P(u,v)))$$

KNF

$$[x \mapsto a] [y \mapsto b]$$

$$(\forall z) (\exists u) (\exists v) (\neg P(a,b) \vee \neg Q(z)) \wedge (\neg P(a,b) \vee P(\underline{u}, \underline{v}))$$

$$[u \mapsto f(z)] [v \mapsto g(z)]$$

$$(\forall z) ((\neg P(a,b) \vee \neg Q(z)) \wedge (\neg P(a,b) \vee P(f(z), g(z))))$$