

$$\neg \left(\left(\forall x \right) \left(\exists y \right) P(x, y) \rightarrow \left(\exists x \right) \left(\exists y \right) R(x, y) \right) \wedge \left(\forall x \right) \neg \left(\exists y \right) Q(x, y)$$

$$\left(\forall x \right) \left(\exists y \right) \left(\exists x \right) \left(\exists y \right) \left(\forall x \right) \neg \left(\exists y \right) \neg \left(P(x, y) \rightarrow R(x, y) \right) \wedge Q(x, y)$$

$$\sigma = \{ x/x, y/y, x/a, y/b, x/c, y/d \}$$

$$\left(\forall x \right) \left(\exists y \right) \left(\exists a \right) \left(\exists b \right) \left(\forall c \right) \neg \left(\exists d \right) \neg \left(P(x, y) \rightarrow R(a, b) \right) \wedge Q(c, d)$$

$$\sigma = \{ y/f(x), a/g(x), b/h(x), d/i(x, c) \}$$

$$\left(\forall x \right) \left(\forall c \right) \neg \left(P(x, f(x)) \rightarrow R(g(x), h(x)) \right) \wedge Q(c, i(x, c))$$

$$\left(\forall x \right) \left(\forall c \right) P(x, f(x)) \wedge \neg R(g(x), h(x)) \wedge Q(c, i(x, c))$$