

# Solution

$\forall xP(x)$	Satisfiable
$\forall xP(x) \supset \exists yP(y)$	Valid
$\forall x.\forall y.(P(x) \supset P(y))$	Satisfiable
$P(x) \supset \exists yP(y)$	Valid
$P(x) \vee \neg P(y)$	Satisfiable
$P(x) \wedge \neg P(y)$	Satisfiable
$P(x) \supset \forall x.P(x)$	Satisfiable
$\forall x\exists y.Q(x, y) \supset \exists y\forall xQ(x, y)$	Satisfiable
$x = x$	Valid
$\forall x.P(x) \equiv \forall y.P(y)$	Valid
$x = y \supset \forall x.P(x) \equiv \forall y.P(y)$	Valid
$x = y \supset (P(x) \equiv P(y))$	Valid
$P(x) \equiv P(y) \supset x = y$	Satisfiable