

1. a)

True 0 proves the assertion

b)

False 2 disproves the assertion

c)

True 0 proves the assertion

d)

False 3 disproves the assertion

e)

$\neg \exists x P(x)$

False 0 proves the assertion

$\forall x \neg P(x)$

False 5 disproves the assertion

f)

$\neg \forall x P(x)$

True 5 disproves the assertion

$\exists x \neg P(x)$

True 5 proves the assertion

2. a) $\forall x \forall y P(x,y)$

False 10 1

b) $\forall x \exists y P(x,y)$

True 10 0

c) $\exists x \forall y P(x,y)$

True 0 10

d) $\exists x \exists y P(x,y)$

True 10 0