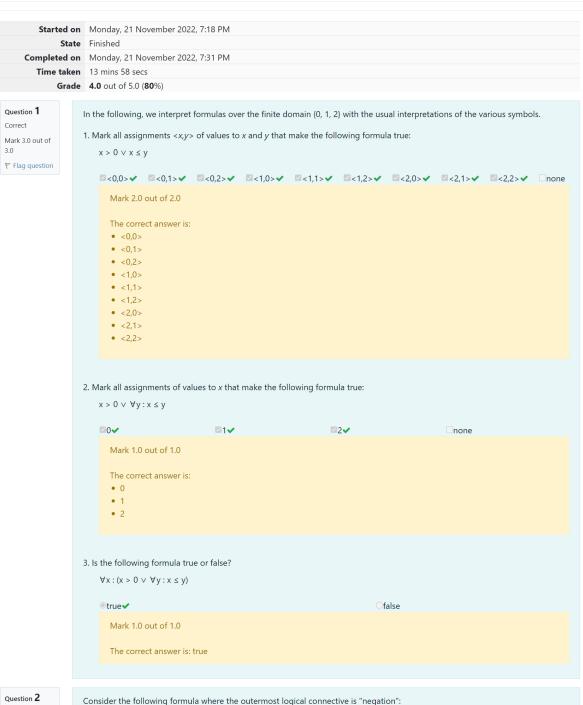


## 338.001, VL Logic, Martina Seidl / Wolfgang Schreiner / Wolfgang Windsteiger, 2022W

Dashboard / My courses / 2022W338001 / Module FOA: First-Order Logic - Syntax, Semantics, and Pragmatics / FOA2Q







Consider the following formula where the outermost logical connective is "negation":

 $\neg\,\forall x: ((\exists y: q(y,x))\,\rightarrow (p(x)\,\vee\,\exists y: (p(\,y\,)\,\wedge\, q(x,\,y))))$ 

Which of the following formulas (where only atomic formulas are negated) is logically equivalent to this formula?

## Select one:

- $\bigcirc$  a.  $\exists x : ((\exists y : q(y, x)) \land (\neg p(x) \land \forall y : (\neg p(y) \lor \neg q(x, y))))$
- $\bigcirc$  b.  $\exists x : ((\forall y : \neg q(y, x)) \land (\neg p(x) \land \forall y : (\neg p(y) \lor \neg q(x, y))))$
- $\bigcirc$  c.  $\exists x : ((\exists y : q(y, x)) \land (\neg p(x) \lor \exists y : (p(y) \land q(x, y))))$
- $\bigcirc$  d.  $\exists x : ((\exists y : q(y, x)) \land (\neg p(x) \land \forall y : (p(y) \land \neg q(x, y))))$
- e.  $\exists x : ((\forall y : \neg q(y, x)) \rightarrow (\neg p(x) \land \forall y : (\neg p(y) \lor \neg q(x, y))))$
- f. None

