Philosophy 240: Symbolic Logic Fall 2009

Sample Solutions to Homework Handout #4: Translating from Predicate Logic

Instructions: Use the given interpretations to translate the following arguments written in predicate logic into natural, English sentences.

	Ax: "x is an athlete" Bx: "x is brawny" Cx: "x is a champion" m: "Mary" g: "Gail" n: "Ned"		
1.	1. (x)(Ax ⊃ Bx) 2. Am • An	/ Bm • Bn	1. All athletes are brawny. Mary and Ned are athletes. So, Mary and Ned are brawny.
2.	1. (x)(Ax ⊃ Bx) 2. (x)(Bx ⊃ Cx)	/ (x)(Ax ⊃ Cx)	2. All athletes are brawny. Everything brawny is a champion. Therefore, all athletes are champions.
3.	1. (x)(Bx ⊃ Cx) 2. (∃x)(Ax • Bx)	/ (∃x)(Ax • Cx)	3. Everything that's brawny is a champion. There are some brawny athletes. So, there are some brawny champions.
4.	1. (x)(Ax ⊃ Bx) 2. ~Bm	/ (∃x)~Ax	4. All athletes are brawny. Mary isn't brawny. So, something isn't an athlete.
5.	1. (x)[Ax ⊃ (Bx ∨ Cx)] 2. Ag • ~Bg	/ Cg	5. All athletes are either brawny or champions. Gail is an athlete, but she isn't brawny. So, Gail is a champion.
6.	1. $(x)[(Ax \bullet Bx) \supset Cx]$ 2. $(\exists x)(Bx \bullet \sim Cx)$	/ (∃x)~Ax	6. All brawny athletes are champions. Some brawny things aren't champions. So, something isn't an athlete.
7.	1. $(\exists x)Ax \supset (x)(Cx \supset B)$ 2. $(\exists x)(Ax \lor Bx)$ 3. $(x)(Bx \supset Ax)$	8x) / (x)(Cx ⊃ Ax)	7. If something is an athlete, then all champions are brawny. Something is either an athlete or brawny. All brawny things are athletes. So, all Champions are athletes.