Predicate Logic Translation II Handout

1. All mice are purple. (Mx, Px)
**(∀x)(Mx ⊃ Px)**

2. No mice are purple.
**(∀x)(Mx ⊃ ~Px)**

3. Some mice are purple.
**(∃x)(Mx · Px)**

4. Some mice are not purple.
**(∃x)(Mx · ~Px)**

5. Snakes are reptiles. (Sx, Rx)
**(∀x)(Sx ⊃ Rx)**

6. Snakes are not all poisonous. (Sx, Px)
**~(∀x)(Sx ⊃ Px) or (∃x)(Sx · ~Px)**

7. Children are present. (Cx, Px)
**(∃x)(Cx · Px)**

8. Executives all have secretaries. (Ex, Sx)
**(∀x)(Ex ⊃ Sx)**

9. Only executives have secretaries.
**(∀x)(Sx ⊃ Ex)**

10. All that glitters is not gold. (Gx, Ax)
**~(∀x)(Gx ⊃ Ax)**

11. Nothing in the house escaped destruction. (Hx, Ex)
**(∀x)(Hx ⊃ ~Ex)**

12. Blessed is he that considers the poor. (Bx, Cx)
**(∀x)(Cx ⊃ Bx)**

13. Some students are intelligent and hard working. (Sx, Ix, Hx)
**(∃x)[Sx · (Ix · Hx)]**

14. He that hates dissembles with his lips, and lays up deceit within him. (Hx, Dx, Lx)
**(∀x)[Hx ⊃ (Dx · Lx)]**

15. Everything enjoyable is either illegal, immoral, or fattening. (Ex, Lx, Mx, Fx)
**(∀x){Ex ⊃ [(~Lx ∨ ~Mx) ∨ Fx]**

16. Some medicines are dangerous if taken in excessive amounts. (Mx, Dx, Tx)
**(∃x)[Mx · (Tx ⊃ Dx)]**

17. Some medicines are dangerous only if taken in excessive amounts.
**(∃x)[Mx · (Dx ⊃ Tx)]**

18. Victorian houses are attractive (Vx, Hx, Ax)
**(∀x)[(Hx · Vx) ⊃ Ax]**

19. Slow children are at play. (Sx, Cx, Px)
**(∃x)[(Cx · Sx) · Px]**

20. Any horse that is gentle has been well-trained. (Hx, Gx, Wx)
**(∀x)[(Hx · Gx) ⊃ Wx]**

21. Only well-trained horses are gentle.
**(∀x)[(Hx · Gx) ⊃ Wx]**

22. Only gentle horses have been well-trained.
**(∀x)[(Hx · Wx) ⊃ Gx]**

23. A knowledgeable, inexpensive mechanic is hard to find. (Kx, Ex, Mx, Hx)
**(∀x){[(Kx · ~Ex) · Mx] ⊃ Hx}**

24. Dogs and cats chase birds and squirrels. (Dx, Cx, Bx, Sx)
**(∀x)[(Dx ∨ Cx) ⊃ (Bx · Sx)]**

25. If all survivors are women, then some women are fortunate. (Sx, Wx, Fx)
**(∀x)(Sx ⊃ Wx) ⊃ (∃x)(Wx · Fx)**

26. Some, but not all, of us got away. (Ux, Gx)
**(∃x)(Ux · Gx) · ~(∀x)(Ux ⊃ Gx)**

27. If all ripe bananas are yellow, then some yellow things are ripe. (Rx, Bx, Yx)
**(∀x)[(Bx · Rx) ⊃ Yx] ⊃ (∃x)(Yx · Rx)**

28. If any employees are lazy and some positions have no future, then some employees will not be successful. (Ex, Lx, Px, Fx, Sx)
**[(∃x)(Ex · Lx) · (∃x)(Px · ~Fx)] ⊃ (∃x)(Ex ·~Sx)**

29. No coat is waterproof unless it has been specially treated. (Cx, Wx, Sx)
**(∀x)[Cx ⊃ (~Wx ∨ Sx)]**          or          **(∀x)[Cx ⊃ (~Sx ⊃ ~Wx)]**
or          **(∀x)[(Cx · Wx) ⊃ Sx]**    or          **~(∃x)(Cx · Wx · ~Sx)**

30. A professor is a good lecturer if and only if she is both well-informed and entertaining. (Px, Gx, Wx, Ex)
**(∀x){Px ⊃ [Gx ≡ (Wx · Ex)]}**