1. $[(A \land B) \to C] \land B \land C' \to (A \to C)$

$[(A \land B) \to C] \land B \land C'$	by hyp.
$(A \to B \to C) \land B \land C'$	by ded.
$A \to (B \to C) \land B \land C'$	by asso
$A \to (C \land C')$	by m.p
$A \to 0$	by neg.
$A \to (C \land 0)$	by dom
$A \to C$	by simp.

2. $C_{(x)} \Rightarrow x$ is a cat

$A_{(x)} \Rightarrow x$ is an animal

$f_{(x)} \Rightarrow x$ is fuzzy

$S_{(x)} \Rightarrow x$ is something

$E_{(x)} \Rightarrow x$ means eats.

$(\forall x)[C_{(x)} \to (f_{(x)} \land A_{(x)})] \land (\exists x)[S_{(x)} \land f_{(x)}] \land (\forall x)[f_{(x)} \to C_{(x)}]$
$\land (\forall x)[E_{(x)} \to S_{(x)}] \to (\forall x)(A_{(x)})$

4. a) $A = \{5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35, 38\}$

b) $B = \{-3, -2, 1, 2\}$

c) $C = \{1, 2, 3, 4, 5, 6, 8, 9, 10, 12, 15, 16, 18, 20, 24, 30, 36,$
   $40, 45, 48, 60, 72, 80, 90, 120, 144, 180, 240, 360, 720\}$

6. $S = \{1, 2, 3, \cdots, 29, 30\}$

$A = \{1, 2, 3, \cdots 30\} - \{9, 18, 27\}$

$B = \{5, 10, 15, 20, 25, 30\}$

$C = \{3, 6, 9, 12, 15, 18, 21, 24, 27, 30\}$

a) $|\mathcal{P}(A)| = 2^{27}$

b) $|A \cup B \cup C| = 30$

c) $|(B \cup C) - (B \cap C)|$

$B \cup C = \{3, 5, 6, 9, 10, 12, 15, 18, 20, 21, 24, 25, 27, 30\}$

$|B \cup C| = 14$

$|B \cap C| = 2$

$14 - 2 = 12$