CS 173, Spring 2016
Examlet 1, Part A

NETID:

FIRST:

LAST:

Discussion: Monday 9 10 11 12 1 2 3 4 5

1. (5 points) State the negation of the following claim, moving all negations (e.g. "not") so that they are on individual predicates.

There is a soup s such that s is tasty and s does not contain meat.

2. (5 points) State the contrapositive of the following claim, moving all negations (e.g. "not") so that they are on individual predicates.

For every jedi j, if j has a light saber and j is not sick, then j can defeat the Dark Side.

3. (5 points) Find all integer solutions to the equation $2p^2 + 5p = 3$. Show your work.

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1. (5 points) State the contrapositive of the following claim, moving all negations (e.g. "not") so that they are on individual predicates.

For every dog d, if d is a terrier, then d is not large and d is noisy.

2. (5 points) State the negation of the following claim, moving all negations (e.g. "not") so that they are on individual predicates.

For every mountain m, if m is tall or m is not in the north, then m has a snow cap.

3. (5 points) Find all integer solutions to $x^2 - 2x - 3 < 0$. Show your work.

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1. (5 points) State the contrapositive of the following claim, moving all negations (e.g. "not") so that they are on individual predicates.

For every mountain m, if m is tall or m is not in the north, then m has a snow cap.

2. (5 points) State the negation of the following claim, moving all negations (e.g. "not") so that they are on individual predicates.

There is a mushroom f such that f is not poisonous or f is blue.

3. (5 points) Suppose that G and H are functions whose inputs and outputs are real numbers, defined by $G(x) = x - 2$ and $H(x) = \sqrt{2x + 1}$, where the square root function returns only the positive root. Compute the value of $H(G(G(8)))$, showing your work.

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1. (5 points) Give a truth table for the following expression and (using your truth table or other means) find a simpler expression equivalent to it.

$(r \to q) \to r =$

q	r	$r \to q$	$(r \to q) \to r$
T	T		
T	F		
F	T		
F	F		

2. (5 points) State the contrapositive of the following claim, moving all negations (e.g. "not") so that they are on individual predicates.

For every egg E, if E floats, then E is not good or the water has been salted.

3. (5 points) Solve $\frac{3}{7x} + a = \frac{b}{7}$ for x, expressing your answer as a single fraction. Show your work.

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1. (5 points) State the negation of the following claim, moving all negations (e.g. "not") so that they are on individual predicates.

For every jedi j, if j has a light saber and j is not sick, then j can defeat the Dark Side.

2. (5 points) Solve $\frac{2m^2 - m - 6}{m - 2} = 9$ for m.

3. (5 points) Give a truth table for the following expression and (using your truth table or other means) find a simpler expression equivalent to it.

$(p \to q) \wedge (p \to \neg q) =$

p	q	$p \to q$	$p \to \neg q$	$(p \to q) \wedge (p \to \neg q)$
T	T			
T	F			
F	T			
F	F			