$\mathbf{CS}$	173,	$\mathbf{Sp}$	ring	2015
Exa	amlet	3,	Par	t B

NETID:

FIRST:

LAST:

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

1. (4 points)  $A = \{\text{fox, cat}\}\$  $A \times (B \cap C) =$   $B = \{3, 4\}$ 

 $C = \{3, 7\}$ 

 $A \cap B =$ 

2. (4 points) Check the (single) box that best characterizes each item.

 $\emptyset \in A$ 

true for all sets A

true for some sets A

false for all sets A

If  $x \in A \cap B$ , then  $x \in A$ .

true for all sets A and B false for all sets A and B

true for some sets A and B

3. (7 points) In  $\mathbb{Z}_{11}$ , find the value of  $[6]^6 + [5]^3$ . You must show your work, keeping all numbers in your calculations small. You may not use a calculator. You must express your final answer as [n], where  $0 \le n \le 10$ .

FIRST:				LAS	<b>T</b> :					
Discussion:	Monday	9 10	0 11	12	1	2	3	4	5	
1. $(4 \text{ points})$ $ A \times (B \cup C) $	=				[3, 4]		C :	$= \{6,$	7,8}	
$\{p+q \mid p \in \mathbb{Z}\}$ 2. (4 points) Chec					, ea car	h ito	m			
	or the (single)	oox mad	ocsi chai	. 4000112	ics cac.	11 1001	.11.			
$A \cap (B \cup C)$ = $(A \cap B) \cup (A$	$A\cap C$	for all set	-		true	for s	some	sets	Α	
Ø is	an el	lement of	$\mathbb{Z}$	a	subset	of $\mathbb{Z}$				

3. (7 points) In  $\mathbb{Z}_{11}$ , find the value of  $[8]^{22}$ . You must show your work, keeping all numbers in your calculations small. **You may not use a calculator.** You must express your final answer as [n], where  $0 \le n \le 10$ .

both

neither

CS 173, Spring 2015 Examlet 3, Part B NETID:											
FIRST:					LAST	Γ:					
Discussion:	Monday	9	10	11	12	1	2	3	4	5	

1. (4 points) 
$$A = \{\text{fox, cat}\}$$
  $B = \{\text{cat, mouse}\}$   
 $A \cap B =$ 

$${p+q^2 \mid p \in \mathbb{Z}, q \in \mathbb{Z}, 1 \le p \le 2 \text{ and } 1 \le q \le 3} =$$

2. (4 points) Check the (single) box that best characterizes each item.

$\emptyset \times \emptyset =$	$\emptyset$	$\{\emptyset,\emptyset\}$ $\{(\emptyset,\emptyset)\}$
A - B  =  A  -  B	true for all sets A false for all sets A	true for some sets A

3. (7 points) In  $\mathbb{Z}_9$ , find the value of  $[5]^{21}$ . You must show your work, keeping all numbers in your calculations small. You may not use a calculator. You must express your final answer as [n], where  $0 \le n \le 8$ .

$\mathbf{CS}$	173,	$\mathbf{Sp}$	ring	2015
Exa	$\mathbf{mlet}$	3,	Part	$\mathbf{t} \; \mathbf{B}$

NETID:

FIRST: LAST:

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

1. (4 points)  $A = \{4, 5, 9\}$   $B = \{\text{arya, bran}\}$   $C = \{2, 4, 10\}$   $B \times A =$ 

 $A \cap C =$ 

2. (4 points) Check the (single) box that best characterizes each item.

 $A - B = B - A \qquad \qquad A = \overline{B} \qquad \qquad \Box$ 

Sets A and B are disjoint

 $A \cap B = \{\emptyset\} \qquad \qquad A \cap B = \emptyset \qquad \boxed{ }$ 

3. (7 points) In  $\mathbb{Z}_{13}$ , find the value of  $[7]^{19}$ . You must show your work, keeping all numbers in your calculations small. You may not use a calculator. You must express your final answer as [n], where  $0 \le n \le 12$ .

CS 173, Spring 2015 Examlet 3, Part B											
FIRST:					LAS	T:					
Discussion:	Monday	9	10	11	12	1	2	3	4	5	
1. $(4 \text{ points})$ $\emptyset \times B =$	$A = \{ apple \}$	, lemo	on}	E	$B = \{4,$	$5, 9$ }		C:	= { (	(apple, 4)	), (5, lemon) }
$(A \times B) \cap C =$											
2. (4 points) Chec	ck the (single)	box tl	hat bes	st cha	racteriz	es eac	h ite	m.			
$ A \cup B  =  A  -$	• •		ll sets A			true	e for s	some	sets	A	
$\emptyset \in A$	true	for al	ll sets A	A [		true	e for s	some	sets	A	

3. (7 points) In  $\mathbb{Z}_{11}$ , find the value of  $[7]^{15}$ . You must show your work, keeping all numbers in your calculations small. You may not use a calculator. You must express your final answer as [n], where  $0 \le n \le 10$ .

false for all sets A

CS 173, S <sub>I</sub> Examlet 3		TID:			
FIRST:		LAS	T:		
Discussion:	Monday 9 1	$egin{array}{cccccccccccccccccccccccccccccccccccc$	1 2 3	4 5	
1. $(4 \text{ points})$ $A \times B =$	$A = \{ water, beer, wind$	B =	{ cup, mug }	$C = \{ wine, $	(water, beer)}
$A \cap C =$					
2. (4 points) Chec	ck the (single) box that	best characteriz	zes each item.		
$\{1,2\} \cup \emptyset =$	$\emptyset$ $\{(1,\emptyset),(2,\emptyset)\}$	[] {(!) {(!) {(!) {(!) {(!) {(!) {(!) {(!)	)}	$\{1,2\}$ undefined	
$A \times B = B \times A$	4 true for all se		false	e for all sets A ar	nd B

3. (7 points) In  $\mathbb{Z}_{13}$ , find the value of  $[7]^{18}$ . You must show your work, keeping all numbers in your calculations small. You may not use a calculator. You must express your final answer as [n], where  $0 \le n \le 12$ .