Name:\_\_\_\_ NetID: Lecture:  $\mathbf{B}$  $\mathbf{A}$ Discussion: Thursday Friday 9 11 **12** 1  $\mathbf{2}$ 3 10 4 5 6

1. (5 points) Let a and b be integers, b > 0. The formula a = bq + r partially defines the quotient q and the remainder r of a divided by b. What other constraint must we add to completely determine q and r?

2. (6 points) Use the Euclidean algorithm to compute gcd(2262, 546). Show your work.

3. (4 points) Check the (single) box that best characterizes each item.

7 | 0 true false

 $7 \equiv -7 \pmod{k}$  always sometimes never

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11

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1. (5 points) Is the following claim true? Informally explain why it is, or give a concrete counterexample showing that it is not.

Claim: For all positive integers a, b, and c, if gcd(a,bc) > 1, then gcd(a,b) > 1 or  $\gcd(a,c) > 1.$ 

2. (6 points) Use the Euclidean algorithm to compute gcd(2079, 759). Show your work.

3. (4 points) Check the (single) box that best characterizes each item.

 $-2 \equiv 2 \pmod{9}$ 

then gcd(b, r) = gcd(b, a)

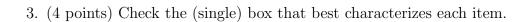
true

false

If a and b are positive and r = remainder(a, b), true

false

CS 173, Spring 18 Examlet 2						rt E	3				;	3	
Name:													
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Discussion:	Thursday	Friday	9	10	11	12	1	2	3	4	5	6	
	Is the following owing that it is n		Info	rmally	explair	n why	it is,	or giv	ve a	conci	ete c	counter	_
Claim	: For all natural 1	numbers $a$ as	nd b,	if $a \mid b$	and $b$	a, th	en $a =$	=b.					
2 (6 : t)	II 4b. Elidaa	l: <u>+ l</u>	4		1/99	00° 69	e) Cl			1-			
2. (6 points)	Use the Euclidean	n aigorithin	to co	mpute	gca(25	989, 0 <u>9</u>	o). Si	10W Y	our v	vork.			



$$-7 \equiv 13 \pmod{5}$$
 true false

For any integers 
$$p$$
 and  $q$ , if  $p \mid q$  then  $p \leq q$ . true false

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Lecture: A B

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1. (5 points) Is the following claim true? Informally explain why it is, or give a concrete counter-example showing that it is not.

For any positive integers s, t, p, q, if  $s \equiv t \pmod{p}$  and  $p \mid q$ , then  $s \equiv t \pmod{q}$ .

2. (6 points) Use the Euclidean algorithm to compute gcd(221, 1224). Show your work.

3. (4 points) Check the (single) box that best characterizes each item.

-7 | 0

true

false

 $k \equiv -k \pmod{7}$ 

always

sometimes

neve

Thursday

Discussion:

**12** 

1

 $\mathbf{2}$ 

false

3

4

5

6

9

1. (5 points) Is the following claim true? Informally explain why it is, or give a concrete counter-example showing that it is not.

10

11

For any positive integers a, b, and c, if  $a \mid c$  and  $b \mid c$ , then  $ab \mid c$ 

Friday

2. (6 points) Use the Euclidean algorithm to compute gcd(7839, 1474). Show your work.

3. (4 points) Check the (single) box that best characterizes each item.

 $-11 \equiv 4 \pmod{7}$  true false

For any positive integers p, q, and k, if  $p \equiv q \pmod{k}$ , then  $p^2 \equiv q^2 \pmod{k}$ 

Name:												
NetID:				Le	ectur	$\mathbf{A}$	В					
Discussion:	Thursday	Friday	9	10	11	12	1	<b>2</b>	3	4	5	6

1. (5 points) Is the following claim true? Informally explain why it is, or give a concrete counter-example showing that it is not.

For any positive integers s, t, p, q, if  $s \equiv t \pmod{p}$  and  $q \mid p$ , then  $s \equiv t \pmod{q}$ .

2. (6 points) Use the Euclidean algorithm to compute gcd(4340, 1155). Show your work.

3. (4 points) Check the (single) box that best characterizes each item.

 $-7 \equiv 13 \pmod{5}$  true false

gcd(k,0) for k positive 0 k undefined