

CS 173, Spring 2015

Examlet 1, Part B

NETID:

FIRST:

LAST:

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

1. (5 points) $\frac{1}{(\frac{1}{2})^{10} + (-\frac{1}{2})^{11}} =$

2. (10 points) Check the (single) box that best characterizes each item.

For any real number x ,
if $|x + 5| \leq 10$, then $|x| \leq 20$.

true

☐

false

☐

undefined

☐

$\neg(p \wedge \neg q) \equiv \neg p \wedge q$

true

☐

false

☐

$\forall x \in \mathbb{R}$, if $\pi = 3$, then $x < 20$.
(π is the familiar constant.)

true

☐

false

☐

undefined

☐

$3^{\lfloor -1.5 \rfloor} =$

-3

☐ $\frac{1}{9}$ ☐ $\frac{1}{3\sqrt{3}}$ ☐ $\frac{1}{3}$ ☐

7 is a rational number

true

☐

false

☐

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1. (5 points) Suppose $\log_k x = 5$. Then $\log_k(kx^{-3}) =$

2. (10 points) Check the (single) box that best characterizes each item.

$\exists n \in \mathbb{Z}$, such that $n^2 = 10$.

true

☐

false

☐

undefined

☐

$\lfloor -3.4 \rfloor$

-3

☐

-4

☐

3.4

☐

undefined

☐

$(p \vee \neg p) \rightarrow q$

true

☐

false

☐

depends on q

☐

$0 \in \mathbb{N}$

true

☐

false

☐

For any real number x , $\lfloor x \rfloor < \lceil x \rceil$.

true

☐

false

☐

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1. (5 points) $\frac{1}{(\frac{1}{2})^4 + (-\frac{1}{2})^6} =$

2. (10 points) Check the (single) box that best characterizes each item.

$\log_5 7 < 1$

true ☐

false ☐

$p \vee q \equiv \neg p \rightarrow q$

true ☐

false ☐

For all positive integers n ,
 if $n! < -10$, then $n > 8$.

true ☐

false ☐

undefined ☐

$\lfloor -3 \rfloor$

3 ☐

-3 ☐

4 ☐

-4 ☐

$\forall x \in \mathbb{R}$,
 if $x^2 > 100$, then $|x| \geq 10$.

true ☐

false ☐

undefined ☐

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1. (5 points) $\frac{\log_2(32^3)}{5} =$

2. (10 points) Check the (single) box that best characterizes each item.

For all positive integers n ,
if $n! < 10$, then $n < 100$.

true

☐

false

☐

undefined

☐

$0 \in \mathbb{N}$

true

☐

false

☐

$\log_2 3 < \log_3 2$

true

☐

false

☐

$p \wedge q \equiv \neg(p \rightarrow \neg q)$

true

☐

false

☐

For any real number x ,
 $\lceil \lfloor x \rfloor \rceil = \lfloor x \rfloor$.

true

☐

false

☐

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1. (5 points) Suppose $\log_k x = 10$. Then $\log_k(x^2\sqrt{x}) =$

2. (10 points) Check the (single) box that best characterizes each item.

$0!$

0

☐

1

☐

-1

☐

undefined

☐

$\neg(p \rightarrow q) \equiv p \rightarrow \neg q$

true

☐

false

☐

$1.5 \in \mathbb{Z}$

true

☐

false

☐

For any real number x ,
 $2\lfloor x \rfloor = \lfloor 2x \rfloor$

true

☐

false

☐

For all integers n , if $n^2 = 101$,
then $n > 11$.

true

☐

false

☐

undefined

☐

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1. (5 points) $\frac{\log_2(48) - \log_2(3)}{3} =$

2. (10 points) Check the (single) box that best characterizes each item.

$\sqrt{2} \in \mathbb{Q}$

true ☐

false ☐

$(p \wedge \neg p) \rightarrow q$

true ☐

false ☐

depends on q ☐

For any rational number x ,
 $\lfloor x \rfloor < \lceil x \rceil$

true ☐

false ☐

$\forall x \in \mathbb{N}$, if $x < -10$, then $x = \pi$.
 (π is the familiar constant.)

true ☐

false ☐

undefined ☐

The interval (a, b) contains b .

true ☐

false ☐