

CS 173, Fall 2015
Examlet 1, Part B

NETID:

FIRST:

LAST:

Discussion: Thursday 2 3 4 5 Friday 9 10 11 12 1 2

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

$3^{\lfloor -1.5 \rfloor} =$ -3 $\frac{1}{9}$ $\frac{1}{3\sqrt{3}}$ $\frac{1}{3}$

$\forall x \in \mathbb{Q}$, if $x^2 = 3$, then $x > 1000$. true false undefined

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

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

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1. (5 points) Suppose $\log_k x = 8$. Then $\log_k(x\sqrt{x}) =$

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

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

true

false

undefined

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

true

false

The interval (a, b) contains b .

true

false

$\lfloor -3 \rfloor$

3

-3

4

-4

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

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.

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

true false

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

true false

For any real number x ,
 if $x > 10$, then $x^2 > 0$.

true false undefined

Shorthand for the set of integers.

J N W Z

$\log_5 7 < 1$

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.

$3^2 = 9$ or $4^2 = 15$

true

false

$0 \in \mathbb{N}$

true

false

7 is a rational number

true

false

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

true

false

undefined

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

true

false

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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.

The interval $[a, b]$ contains b .

true

false

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

true

false

undefined

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

true

false

7 is a real number

true

false

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

true

false

depends on q

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1. (5 points) $\log_3(45) - \log_3(10) =$

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

$0!$ 0 1 -1 undefined

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

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

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

$\log_3 2 \leq \log_2 3$ true false