2301 COL 202 Tutorial 2.4

Anubhav Pandey

TOTAL POINTS

2 / 2

QUESTION 1

1 Problem 4 2 / 2

✓ **+ 2 pts** *Correct*

+ 1 pts Partially attempted

- 0 pts Unattempted

Tutorial-2

Group-4

Anubhav Pandey(2022CS51136)

COL202 Tutorial Submission

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Problem 1

[Submission Problem for Group 4] For each of the following propositions, indicate which of these are false when the domain ranges over 1) $\mathbb{Z}$ >0, 2) $\mathbb{Z}$, 3) $\mathbb{R}$

1. $\forall\ x\ \exists\ y : 2x - y = 0.$
2. $\forall\ x\ \exists\ \mathrm{y} : x - 2y = 0.$
3. $\forall\ x, x < 10 \implies (\forall y, y < x \implies y < 9)$
4. $\forall x \exists y, [y > x \wedge \exists z, y + z = 100]$

1

$$\forall\ x\ \exists\ y : 2x - y = 0.$$

1.1

True

1.2

True

1.3

True

2

$$\forall\ x\ \exists\ \mathrm{y} : x - 2y = 0.$$

2.1

False

Counterexample :

If $x = 1$, we don't find any such y

2.2

False

Counterexample :

If $x = 1$, we don't find any such y

2.3

True

3

$$\forall\ x, x < 10 \implies (\forall y, y < x \implies y < 9)$$

3.1

True

3.2

True

3.3

False

Counterexample :

Suppose $x = 9.9, y$ can be 9.8

4

$$\forall x \exists y, [y > x \wedge \exists z, y + z = 100]$$

4.1

False

Counterexample :

Suppose, $x = 100$, we don't find any such y, z in the given domain

4.2

True

4.3

True

1 Problem 4 2 / 2

✓ **+ 2 pts** *Correct*

+ 1 pts Partially attempted

- 0 pts Unattempted