Problem Set 0 Solution

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Question 1

- Solution complete. Please see above

Question 2

- CSC 165

- Mathematical Expression and Reasoning for Computer Science

- David Liu

Question 3

- $S_1 = \{\, x \mid x \in \mathbb{Z},\ x < 30 \,\}$
  $S_2 = \{\, 0, 1, 9, 10, 11, 19, 20, 21, 29, 30, 31 \ldots \,\}$
  So,
  $S_1 \cap S_2 = \{\, 0, 1, 9, 10, 19, 20, 21, 29 \,\}$

Question 4

p	q	r	$\neg q$	$p \vee \neg q$	$p \iff r$	$(p \vee \neg q) \Rightarrow (p \iff r)$
T	T	T	F	T	T	T
T	T	F	F	T	F	F
T	F	T	T	T	T	T
F	T	T	F	F	F	T
T	F	F	T	T	F	F
F	T	F	F	F	T	T
F	F	T	T	T	F	F
F	F	F	T	T	T	T

Question 5

i)

$$5n + \frac{2n \cdot (n-1)}{2} = 165165$$

$$5n + \frac{2n^2 - 2n}{2} = 165165$$

$$n^2 + 5n - n = 165165$$

$$n^2 + 4n = 165165$$

$$n^2 + 4n + 4 = 165169$$

$$(n+2)^2 = 165169$$

$$n = \sqrt{165169} - 2$$

$$n = 404.409891612$$

$$n \approx 405$$