CSC236 Worksheet 3 Review

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Question 2

- **Rough Work:**

Define $P(e) : S_1(e) = 3(s_2(e) - 1)$

I will use structural induction to prove $\forall \in \varepsilon,\ P(e)$.

1. Basis

   Let $\{x, y, z\} \in \varepsilon$.

   In this step, there are following cases to consider: $e = x$, $e = y$, and $e = z$.

   In each of the cases, we have $s_1(e) = 0$ and $s_2(e) = 1$.

   Thus,

$$\begin{aligned} s_1(e) = 0 &= 3(0) && (1)\\ &= 3(1-1) && (2)\\ &= 3(s_2(e) - 1) && (3) \end{aligned}$$

   So, , $P(e)$ holds.

2. Inductive Step