Exercise 5

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Question 1

1)

$$\forall x(student(x) \implies walks(x) \vee drives(x) \vee rides(x))$$

2)

$$\forall x, y\,((lives\_at(x, y) \wedge lives\_at(Andrew, y)) \implies student(x))$$

3)

$$\forall x, y, z\ \big(studies\_at(x, y) \wedge lives\_at(x, z) \wedge distance(y, z, d_1) \wedge$$
$$distance(\text{"}HighPart\text{"}, \text{"}St.George\text{"}, d_2) \wedge greater\_than(d_1, d_2) \implies \neg walks(x)\big)$$

4)

$$\forall x, y, z\,(uses(x, y) \wedge owns(z, y) \implies permits(z, x, y))$$

5)

$$\forall x \exists y\big(owns(x, \text{"}TTCMaps\text{"}) \wedge permits(x, y, \text{"}TTCMaps\text{"}) \wedge \forall z(permits(x, z, \text{"}TTCMaps\text{"}) \implies z = y)\big)$$