

Name: _____ Section 8th ___ 9th ___ Grade: _____ <-- instructor use

1. Give purely symbolic definitions of the three languages on the “Languages and Prefixes” slide
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2. What three properties must an equivalence relation satisfy?
 - a)
 - b)
 - c)
3. For a given prime integer p , is $R_p = \{(a, b) : a, b \in \mathbb{N} \wedge \exists k \in \mathbb{Z}(a - b = kp)\}$ an equivalence relation? Explain.

4. If $L_1 = \{a^n : n \geq 0\}$ and $L_2 = \{b^n : n \geq 0\}$, what is $L_1 L_2$?

What is L_1^* ?

5. What are two standard ways of algorithmically defining an infinite set?
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6. When is a (propositional) wff a *tautology*? **(did not get to this question in Section 2 in 201220)**
7. When we say a set of inference rules is *sound*, what do we mean?
8. What is a predicate?
Give an example of a predicate application with no free variables
with one or more free variables
9. When is a first-order wff a *sentence* (statement)?
10. Give an example of a model for $\exists x (\forall y (xy = 0))$
11. From $\{ \forall t(p(t) \rightarrow q(t)), \forall t(q(t) \rightarrow r(t)), \neg r(C) \}$, prove $\neg p(C)$. Give reasons for your steps.

12. Tell your instructor about anything from today's session (or from the course so far) that you found confusing or still have a question about. If none, please write "None". Continue on the back if needed.