

Math 3342: Homework #5 extra questions

Question 1. Find $\frac{d}{db^2}\{xx^R \mid x \in \{a,b\}^*\}$, and write your answer using set notation in as simple a form as you can.

Question 2. Show that this language is nonregular: $L = \{a^ncb^nc\}$.

Question 3. Show that this language is nonregular: $L = \{a^nb^m \mid m = 3n + 2\}$.

Question 4. Show that this language is nonregular: $L = \{(bab)^nb^n\}$.

Question 5. For the language $L = \{xax^R \mid x \in \Sigma^*\}$:

a) Show that L is regular when $\Sigma = \{a\}$.

b) Show that L is nonregular when Σ has more than 1 element.

Question 6. Show that this language is nonregular: $L = \{a^n \mid n \text{ is a square}\}$.