(N) Pseudorandom Numbers (1/3) [15 Points]

Dinka is a Nilotic dialect cluster with about 1.3 million native speakers, mostly ethnic Dinka people in South Sudan. There are several main varieties, but this problem focuses on the Agar dialect.

When linguists first studied the language, they believed that the singular and plural forms of Dinka nouns were completely unpredictable. More recently, however, studying the way that verbs conjugate in Dinka allowed linguists to find patterns in the singular and plural forms. This has allowed many nouns to be grouped according to common patterns, although many remain unexplained.

Below are 22 Dinka nouns, in both singular and plural forms, each of which follow one of the common patterns. The translations have been provided only for interest: they have no bearing on the solution to the problem.

Notes: **ɛ** is the vowel in "bed", and **ɔ** is the vowel in "bought". Dinka has three vowel lengths: short (e.g., **a**), medium (e.g., **aa**), long (e.g., **aaa**); as well as three tones, high (e.g., **á**), low (e.g., **à**), falling (e.g., **â**). **j** and **w** are semivowels, pronounced like the first sounds in "yes" and "with" respectively. **ṭ**, **ḍ**, **ɲ**, **ɟ** and **ŋ** are consonants; how consonants are pronounced is not relevant for this problem. While it is not strictly necessary for solving the problem, it may be helpful to know that vowels can be classified by (among other things) *height*, i.e., how high or low the tongue is in the mouth during their pronunciation. In this problem, **i** and **u** are high, **e** and **o** are high-mid, **ɛ** and **ɔ** are low-mid, and **a** is low.

Singular	Plural	Translation
láj	**làaj**	*animal*
gâaar	**gɛ́ɛr**	*ankle bell*
ŋàaar	**ŋɔ́ɔr**	*bean*
dít	**djɛ̀ɛt**	*bird*
àɟwɔ̀ɔɔŋ	**àɟóoŋ**	*blacksmith*
ḍàaŋ	**ḍɛ̂ɛŋ**	*bow, gun*
gɔ́l	**gàal**	*cowdung fire*
twɔ́ɔŋ	**tóŋ**	*egg*
màac	**mɛ̂ɛc**	*fire*
rúp	**rwòop**	*forest*
àdjɛ́ɛl	**àdíl**	*gazelle*

Singular	Plural	Translation
bôook	**bóok**	*hide*
ròok	**rôok**	*kidney*
ɲɔ̀ɔk	**ɲɔ̂ɔk**	*louse*
àgâaaɲ	**àgɛ́ɛɲ**	*monitor lizard*
àgɔ̂ɔɔk	**àgɔ́ɔk**	*monkey*
ḍél	**ḍɛ̀ɛl**	*path*
wáal	**wál**	*plant*
ɲêeel	**ɲéel**	*python*
dèeŋ	**dêeŋ**	*rain*
àmàaal	**àmɛ́ɛl**	*sheep*
àtwòoor	**àtúur**	*slime*

Here are some forms of 4 Dinka verbs.

Root	1st person	3rd person	Translation
nɔ̀ŋ	**nàaŋ**	**nɔ̀ɔŋ**	*to have*
kùc	**kwòoc**	**kùuc**	*to not know*
màat	**màaat**	**mɛ̀ɛɛt**	*to smoke*
lɔ̀ɔk	**làaak**	**lɔ̀ɔɔk**	*to wash*

(N) Pseudorandom Numbers (2/3)

N1. Some singular or plural forms of Dinka nouns are given below. Only two of them follow one of the common patterns demonstrated above. Circle the letters ((a)-(f)) of those two forms.

	Singular	Plural	Translation
(a)	**àdɛ̀ɛn**		*beautiful one*
(b)	**mìiit**		*firefly*
(c)	**wèeet**		*metal*
(d)		**tôoŋ**	*pot*
(e)		**ɟâak**	*evil spirit*
(f)		**tûuŋ**	*horn*

N2. Assuming that the following verbs conform to one of the common patterns, fill in the blanks in the table below.

Root	1st person	3rd person	Translation
(a)	**lwɔ̀ɔɔj**	(b)	*to be different*
(c)	(d)	**cɛ̀ɛm**	*to eat*
pèec	**pɛ̀ɛɛc**	(e)	*to loot*
wìc	(f)	**wìic**	*to need*
(g)	(h)	**bòok**	*to throw at*

N3. Below are the singular or plural forms of 10 more Dinka nouns. Assuming that they conform to one of the common patterns, fill in (a)-(j) to predict the missing forms. If there is more than one possible prediction, give them all.

Singular	Plural	Translation
(a)	**rím**	*blood*
(b)	**wíil**	*bristle*
àŋâaar	(c)	*buffalo*
rɛ̀ɛɛc	(d)	*fish*
(e)	**kàal**	*hole in ground*

Singular	Plural	Translation
kók	(f)	*hole in tree*
ràaan	(g)	*person*
(h)	**léek**	*pestle*
ról	(i)	*voice*
jìiṯ	(j)	*well*

(N) Pseudorandom Numbers (3/3)

N4. Explain what you have observed about Dinka nouns and verbs from the data in this problem.