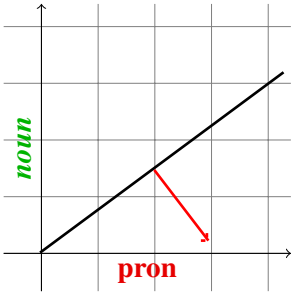
b. (6 points) What is the decision boundary found by the perceptron? Give a formula, and draw the boundary on the graph with a vector pointing in the direction of the positive class (similar to Figures 4.6 and 4.9 in the reading).

Formula:

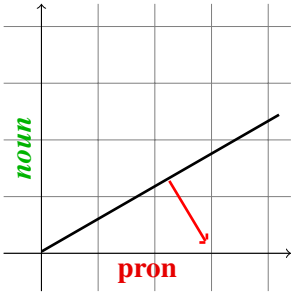
6p - 8n = 0
The red line shows the direction of the +ve class



c. (5 points) Suppose instead of the vanilla perceptron algorithm, we used an *averaged* perceptron (section 4.6 in the reading). What would be the decision boundary? Give a formula and draw the boundary on the graph.

Formula:

29n - 16p = 0
The red line shows the direction of the +ve class



d. (4 points) How would each of the perceptrons (vanilla and averaged) classify each of the following texts?

Finally **her** ***confidence*** grew to such an ***extent*** that **she** was able to explain that **she** had been christened not in the ***vanguard*** but in the extreme ***rearguard*** of ***fashion***, after a Wesleyan ***great-aunt***, and that **her** ***mother*** had formed the ***notion*** not as an unusual and charming ***conceit*** but as a preconceived ***penance*** for **her** ***daughter***, whose only ***offences*** at that tender ***age*** were **her** ***existence*** and **her** ***sex***.

Vanilla: -1 Averaged: -1

Some backward ***tribes*** inhabited the remoter ***mountains*** and ***jungles*** but the main ***population*** was of the same ***race***; today **they** are known as ***Vietnamese*** but then the outside ***world*** knew **them** as ***Annamites*** or ***Annamese***.

Vanilla: -1 Averaged: -1