

FEBRUARY 12: DAILY VITAMIN

This daily vitamin will give you an opportunity to practice some of the concepts and/or calculations presented during class. The daily vitamin is not compulsory and won't be graded but remember: **if you take your vitamins, you'll be stronger for it!**

1. For each function $f(x)$ below, do the following:

- explain carefully why $f(x)$ admits an inverse (desmos.com may be useful!);
- determine a formulae for $f^{-1}(x)$;
- draw the graph of $f^{-1}(x)$.

(a) $f(x) = 3x^5 + 10$, x any real number.

(b) $f(x) = -5(x + 1)^2$, where $x \geq -1$.

(c) $f(x) = -5(x + 1)^2$, where $x \leq -1$.

Solution:

2. Using the two of the expressions below, complete the sentence:

'the unique', $a = y^x$, 'one of many', $x = a^y$, $y = a^x$

Let $a > 0$, $a \neq 1$, and let $x > 0$ be a real number. Then, $y = \log_a(x)$ is _____ real number(s) satisfying _____.