

Linear Algebra
MATH 224W – Spring 2015

Week 6: Solving linear systems, elementary matrices, and finding inverses

Writing Assignment #5

due Monday, Sept. 28

AP #1 **This is not a proof, but please still type it up (carefully).** Rewrite the following sentence in symbolic logic notation; \mathcal{F} denotes the set of all functions from \mathbb{R} to \mathbb{R} . Think carefully about the placement of quantifiers! *Hint: This statement is an implication!*

For all $a, b \in \mathbb{R}$ with $a < b$ and any function $f \in \mathcal{F}$ that is continuous on $[a, b]$, there is some $c \in [a, b]$ such that $f(c) \leq f(x)$ for all $x \in [a, b]$.

AP #2 Rewrite the statement below as a universally quantified implication; then prove it using the direct method.

“The sum of two even integers is even.”

AP #3 Give a proof by contrapositive of the following statement.

“For all $x \in \mathbb{R}$, if x is positive and irrational, then \sqrt{x} is also irrational.”

AP #4 Give a proof by contradiction of #4(d) on page 80.

AP #5 Disprove the following statement.

“The product of two irrational numbers is irrational.”

Homework #5

due Thursday, Oct. 1

§2.1 #1(b), 4, 8

§2.2 #2, 4, 8, 12, 14, 32

Hint: For #12, read the hint for #10. For #32, make sure to solve the system you create and find the polynomial $p(x)$.

§2.3 #2