

MAS 4203 - Intro Number Theory - Spring 2017

HOMWORK 1

Due Wednesday, January 25, 2017 by 5PM
at LIT 408 (or hand in at class).

Instructions:

- * It is ok to get help on this assignment. Work taken from any other book or website must be cited properly.
- * It is not ok to copy work from anyone else or an outside unless properly cited.
- * All work should be written in a precise and coherent manner, and in a way any student in the class can follow your work. Show all necessary working & reasoning. When giving proofs write in complete sentences so that your reasoning is clear.

Do 5 problems with at least one problem from each section.

Section 1.2

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24

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Section 1.4

(*) Let $a=4331, b=1342$. Use Euclidean Algorithm to find $d=(a,b)$ and find integers x,y :

$$ax + by = d.$$

Section 1.3

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38

40

47

(*) Let $a, b, c, d \in \mathbb{Z}$ where a, b not both zero.

Let $d = (a, b)$. PROVE

$ax + by = c$ for some $x, y \in \mathbb{Z}$
if and only if $d \mid c$.

Section 1.5

(*) Let $a = 2^3 \cdot 3^2 \cdot 5^2 \cdot 13^7$, $b = 2^5 \cdot 3^3 \cdot 13^5 \cdot 19$

Find (a, b) & $[a, b]$.

(*) # 70