MATH 2170-19W Problem Set 2

January 22, 2019

Due: in class, January 30, 2019

[8] **Question 1.** Using the Euclidean algorithm,
(a) determine $d = (112860,\, 51876)$;

(b) find integers x and y such that $d = 112860x + 51876y$;

(c) find $m = [112860,\, 51876]$.

[8] **Question 2.** You can take it as "given" that $(30,\, 42,\, 70) = 2$. Recall that $(a, b, c) = ((a, b), c) = (a, (b, c))$.

Find integers x , y , and z such that $30x + 42y + 70z = 2$.

Comment: There are several different pathways through to the solution, and they lead to different numerical answers. All correct solutions are acceptable.

[4] **Question 3.** Prove that the pair of equations

$$\begin{aligned} (a,\, b) &= d \\ ab &= m \end{aligned}$$

has a simultaneous solution iff $d^2 \mid m$.

[20] TOTAL