Math 220-Homework 10

Due Wednesday 11/18 at the beginning of class

PART A

Problems from the textbook:

- Section 5.3 # 11, 12, 13, 15
- Section 5.4 # 8(b,c), 9, 19

PART B

1. Let $a, b, c \in \mathbf{Z}$. Determine the truth or falsehood of the following statements. (CLEARLY circle TRUE or FALSE for each statement.)

   (a) $\gcd(a, b) = gcd(-a, |b|)$.

   (b) If $a|b$ then $a \leq b$.

   (c) $2|ab(a + b)$.

   (d) If $a|(b + c)$ then $a|b$ or $a|c$.

   (e) Let a and b be coprime. Suppose that there exist integers q and r such that $b = aq + r$, $0 \leq r < a$. Then $\gcd(a, r) = 1$.

   (f) Let $a, b \in \mathbf{Z}^+$ and let $\gcd(a, b) = 2015$. Then $\gcd(\frac{a}{2015}, \frac{b}{2015}) = 1$.

   (g) If n is a composite number, then n has a prime factor p such that $p \leq \sqrt{n}$.

2. Find integers x and y such that $1313x + 507y = \gcd(1313, 507)$.