CS 278 Assignment 5

2.1.1 (b) $n = -101$ odd

$-101 = 2k + 1$ for some integer k

$(-102 = 2k)/2$

$-51 = k$ true

(d) $n = 1$ odd

$1 = 2k + 1$ for some integer k

$0 = 2k$

$0 = k$ true

2.1.2 (d) $-2n^2 - 5$

$-2n^2 - 4 - 1$

$-2(n^2 - 2) - 1 = 2k - 1$ (odd)

$-2(n^2 - 2) = 2k$

$n^2 - 2 = k$

$\in \mathbb{Z}$ $\in \mathbb{Z}$ both are integers so proof is true, $-2n^2 - 5$ result will be odd

2.1.3 (b) $n = -5 = -10/2$ rational

$x = -10$ $y = 2$

(d) $n = \frac{\pi}{6\pi}$

Every number divides itself

If $n \in \mathbb{Z}$, then

$n \cdot 1 = n$, so

$n \mid n$, therefore

$\pi \mid \pi$

$\rightarrow n = \frac{\pi}{\pi} \cdot \frac{1}{6}$

$x = 1$, $y = 6$

rational

2.1.4 (c) $n = 8$

Set of all divisors $= \{1, 2, 4, 8\}$

(d) $n = 75$

Set of all divisors $\{1, 3, 5, 15, 25, 75\}$

2.1.5 (b) $n = 1$

first prime is 2, 1 is neither composite or prime

(e) $n = 2$ prime

(f) $n = 56328$ is composite

$56328 = 2 \times 28164$

2.1.6 (b) It is not true that $x \leq 7$

$x > 7$

(c) It is not true that $x > 7$

$x \leq 7$