

Subject 24.242. Logic II. Answers to the first sample homework.

1. Write down a bounded formula whose extension is the set of triples $\langle x, y, z \rangle$ such that x, y , and z are positive integers and z is a common divisor of x and y .
$$(((0 < x \wedge 0 < y) \wedge 0 < z) \wedge ((\exists u < sx)(uz) = x) \wedge (\exists v < sy)(vz) = y)).$$
2. Define, for F , a finite set of natural numbers, $\text{Code}(F)$ to be $\sum_{x \in F} 2Ex$, so that F is the set of places in the binary decimal expansion of $\text{Code}(F)$ where 1s appear. Give the Arabic numeral for $\text{Code}(\{2, 4, 6, 8\})$.
$$\text{Code}(\{2, 4, 6, 8\}) = (2E2) + (2E4) + (2E6) + (2E8) = 4 + 16 + 64 + 256 = 340.$$