

CS 22 In-class practice – Translation of English to Predicate Calculus
(from *Set Theory and Logic*, by Robert Stoll, p.199)

For each of the following sentences, convert from English to mathematical symbols. Use quantifiers and logical operations as appropriate. You may use some shorthand, such as writing “ $J(x)$ ” to stand for “ x is a judge” or “ $A(x, y)$ ” to say “ x admires y ”.

1. All judges are lawyers.
2. Some lawyers are shysters.
3. No judge is a shyster.
4. Some judges are old but vigorous.
5. Judge Jones is neither old nor vigorous.
6. All Congressmen who are old are lawyers.
7. No woman is both a politician and a housewife.
8. All women who are lawyers admire some judge.
9. Some lawyers admire only judges.
10. Some lawyers admire women.
11. Judge Jones does not admire any shyster.
12. There are both lawyers and shysters who admire Judge Jones.