(∀x) ¬boys(x) ↔ ¬(∃x) book (x)

All not boys mean all girl not some book

¬(∀x) boys ↔ (∃x) ¬ boys(x)

Not all boys some boys some girls some not boys

Not all are boyss some are boys and some not boys there the point to note is some not boys

(∀x) boys(x) ↔ ¬ (∃x) ¬boys(x)

All boys some not boys is not

(∀x) ¬P(x) ↔ ¬(∃x) P(x)