Homework 3.1 & 3.2

3.1

1) A) False
   B) True

3) Let $P(x)$ be the predicate "$x > \frac{1}{x}$"
   A) Write $\underset{T}{P(2)}, \underset{F}{P(\frac{1}{2})}, \underset{F}{P(-1)}, \underset{T}{P(-\frac{1}{2})}, \underset{F}{P(-8)}$

9) Counter-examples   Let $x = 1$ $1 \not> \frac{1}{1}$
   $\forall x \in \mathbb{R}, \; x > \frac{1}{x}$ $x = 2$ $2 > \frac{1}{2}$

19) $\forall$ integers n, if n^2 is even then n is even
    B, D, E

22) A) All Java programs have at least 5 lines
    $\forall$ all X, if it's a Java program then it has
    at least 5 lines

23) A) All equilateral triangles are isosceles
    $\forall x$ if x is an equilateral triangle, then
    x is isosceles

3.2

1) A, B, E

3) $\forall$ fish x, x has gills
$\exists$ a fish x such that x doesn't have gills
$\exists$ a movie m such that $m > 6$ hrs long
$\forall$ movies m, m is $\leq$ 6 hrs long

6) A) Sets A & B don't have any points in common
Sets A & B have at least 1 point in common

11) The sum at least 2 irrationals is rational

22) At least one int has an odd sq but not itself
is odd

39) If a person earns a grade of C
in this course, then the grade counts
towards graduation

41) If a person isn't on time each day, the
person won't keep their job

45) There is a person who has a large
income who is unhappy