Solutions for homework 1, questions 5-8

Problem 5. (41-16)
   a) T, x = sqrt(2)
   b) F
   c) T, x^2 >= 0, so x^2 + 2 >= 1
   d) F, counter example x = 1

Problem 6: 41-22
Let Y(x) mean x is in your class
   a) Let C(x) mean x has a cell phone  \( \forall x \ Y(x) \rightarrow C(x) \).
   b) Let F(x) mean x has seen a foreign movie.  \( \exists x \ F(x) \wedge Y(x) \).
   c) Let S(x) mean x can swim  \( \exists x \neg S(x) \wedge Y(x) \).
   d) Let Q(x) mean x can solve quadratic equations  \( \forall x \ Y(x) \rightarrow Q(x) \).
   e) Let R(x) mean x wants to be rich.  \( \exists x \neg R(x) \wedge Y(x) \).

Problem 7: 41-34
   a) x = 1
   b) x = sqrt(2)
   c) x = 0

Problem 8: 41-48
   a) F, counter examples x = 2, x= 3
   b) F, counter examples x = -1, x = 1
   c) T, x = 3
   d) F, x can never equal x + 1