

Solutions for homework 1, questions 5-8

Problem 5. (41-16)

- a) T, $x = \sqrt{2}$
- b) F
- c) T, $x^2 \geq 0$, so $x^2 + 2 \geq 1$
- 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 $x + 1$