

# Homework 1 - Worksheet

1) Solve the following inequalities

a)  $x^2 + 2x - 1 > 2$

b)  $\frac{(x-1)(x-2)}{(x-3)(x-4)} > 0$

c)  $|x+1| + |x-1| > 3$

2) Solve the following equations

a)  $x^2 - 5x + 6 = 0$

b)  $\frac{x-1}{x+2} = 3$

c)  $x + \frac{|x|}{2} = -4$

d)  $||x+1| - 1| = \frac{1}{2}$

3) Given an example of a function that is

a) surjective, but not injective

b) injective, but not surjective

c) ~~neither~~ neither injective nor surjective

4) Show  $\sqrt{3}$  is irrational (Hint: Follow proof from section 0.1) of the textbook