

Math313
Homework 3, due Friday, February 5

1. Determine the domains of the following functions:

$$f(x) = \frac{x}{x}$$

$$f(x) = \sqrt{x^2 - 4}$$

$$f(x) = \arctan \frac{1}{x}$$

$$f(x) = \frac{x^2 + 2x + 1}{(x - 1)\sqrt{1 - x^2}}$$

2. Let $f(x) = \sqrt{2 - x}$, and $g(x) = \sin x$. Find the formulas for $f \circ g$ and $g \circ f$, determine their domains.
3. The rounding function $r(x)$ is define as follows: $r(x) = [x]$, if the fractional part of x is less than 0.5, otherwise $r(x) = [x] + 1$. Find a single formula that describes the same function. Draw its graph.