

Practice problems review II

Exercise 1: domains and ranges; inverses

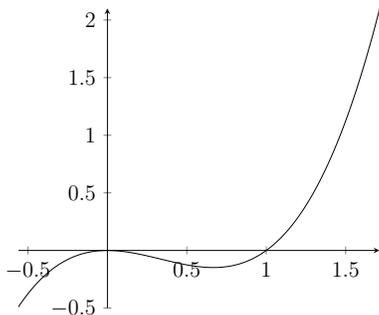
- (1) Let $f(x) = x^2 + 4$, $g(x) = \sqrt{x - 4}$. What are the domains and ranges of f , g , $f \circ g$ and $g \circ f$?
- (2) Let $f(x)$ have the domain $[2, 5]$ and range $[-3, 4]$. What are the domains and ranges of
 - (a) $f(-x + 5) + 2$
 - (b) $3f^{-1}(2x + 1)$
 - (c) $2f(3x + 1) + 2$
- (3) Let $f(x) = 1 + \sqrt{2 + 3x}$. What are the domain and range of f ? Find a formula for $f^{-1}(x)$. What are the domain and range of $f^{-1}(x)$?

Exercise 2: logarithmic and exponential equations Solve for x :

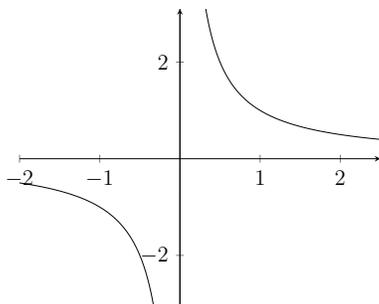
- (1) $\ln(x + 1) + \ln(x + 2) = \ln(30)$
- (2) $2^{5^x} = 5^{2^x}$

Exercise 3: library of functions Consider the following 4 classes of functions: linear, polynomial, rational, power. For each of the following graphs, write down which classes (if any) it belongs to, and which ones (if any) it doesn't belong to. Note that all four classes should be written for each graph.

(1)



(2)



(3)

