Math-08 Homework #11

Reading

- Text book section 2.4-2.7

Problems

Note that all sketches of graphs must have all found intercepts and discontinuities labeled. All domains and ranges must be expressed in interval notation. Remember, sketches do not have to be to scale!

1). Consider the following piecewise function:

$$f(x) = \begin{cases} x, & (-4, 0) \\ x^2, & (0, 2) \end{cases}$$

a). Sketch the graph for $f(x)$.

b). List the transformations for $g(x) = -2f(x-1) + 3$ in the proper order.

c). Sketch the graph for $g(x)$.

d). What are the x and y intercepts for $g(x)$ (if any)?

e). What are the domain and range of $g(x)$?

2). Consider the function:

$$h(x) = \sqrt{x+1} - 3$$

a). Write $h(x)$ as a composition of two functions $f \circ g$, neither of which is just x.

b). Determine the x and y intercepts for $h(x)$ (if any).

c). Sketch the graph for $h(x)$.

d). Determine the domain and range for $h(x)$.

3). Consider the function:

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

a). List the transformations, starting with one of the standard functions.

b). Determine the x and y intercepts for $f(x)$ (if any).

c). Sketch the graph for $f(x)$.

d). Determine the domain and range for $f(x)$.

4). Consider the following two functions:

$$f(x) = \sqrt{x} + 1$$

$$g(x) = x^2$$

Determine the following and state the domain for each:

a). $f + g$

b). fg

c). $\frac{f}{g}$

d). $\frac{f}{f}$

e). $f \circ g$