Alg 2A: Review problems for Functions.

1. Let $f(x)=\dfrac{2x+1}{3-x}$

a) Find $f^{-1}(x)$

b) Find the domain and range of $f(x)$

2. Let $f(x)=-2(x-1)^2+3$

a) Find a maximal domain so that $f(x)$ one to one **and** so that -4 is in the domain.

b) Without finding $f^{-1}(x)$, find $f^{-1}(-7)$.

c) Now find $f^{-1}(x)$.

3. Let $f(x)=\sqrt{x^2-1}$. $g(x)=\dfrac{1}{2x-6}$

a) Find the domain of each function above.

b) Find the domain of each:

i) $(f+g)(x)$ ii) $\left(\dfrac{g}{f}\right)(x)$ iii) $(g\circ f)(x)$

4. a) Find $f(x)$ if $(f\circ f)(x)=\sqrt[12]{x}$

b) Find $f(x)$ if $(f\circ g)(x)=\sqrt{x-4}$ and $g(x)=x+1$

5. Sketch $f(x)=\begin{cases}[x]+2 & x\geq 1\\ \sqrt{1-x} & x<1\end{cases}$

7. Sketch $g(x)=[\![-|x|]\!]$

8. If the point $(2,-3)$ is on the graph of a function $f(x)$, what point(s) must lie on the graph of:

a) $f(2x)$

b) $f(2x-6)$

c) $f(-x)$

d) $|f(x)|$

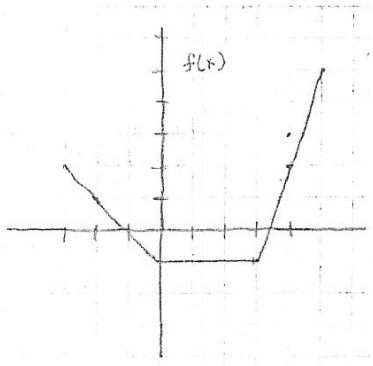
e) $f(|x|)$

9. If $f(x)=\{(0,1),(1,-2),(2,3),(3,-1)\}$ and $g(x)=\{(1,2),(-1,1),(3,0)\}$, find the domain of $f\circ g$ and $g\circ f$.

10. If g has zeros at -1, 3 and 7, what are the zeros of g(-2x+3)?

11. If $f(x)=[\![x+2]\!]$, what is $f(-3.4)$? Graph f(x).

12. a) State the domain and range of *f*(x) whose graph is:



b) Find the domain of $y=\sqrt{f(x)}$

13. Given that $f(x)$ is even and $g(x)$is odd, determine if the following are odd, even or neither:

a) $h(x) = g(x) + x^3$

b) $k(x) = g(g(x))$

c) $p(x) = g(x) + 5$

d) $q(x) = f(g(x))$