Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Honors Math 3 Unit 1 Review**

***Using words, describe the transformation of the parent function f(x) that will occur when graphing g(x):***

1. $f\left(x\right)= \left|x\right|; g\left(x\right)= \left|x+2\right|+6$ 2. $f\left(x\right)= \left|x\right|; g\left(x\right)= -\left|3x+9\right|-5$

***Graph each function. Give the domain and range for questions 4 – 8, 11, and 12.***

3. $2x-y=-4$ 4. $f\left(x\right)= -2\left(x+2\right)^{2}-4$

5. $f\left(x\right)= -\left|2x-6\right|+5$ 6. $f\left(x\right)= \left|x+4\right|-1$

7. $f\left(x\right)= x^{2}-2x+6$ 8. $ f\left(x\right)= -2x^{2}+4x-1$

9. $f\left(x\right)= \left⌊x\right⌋+1$ 10. $f\left(x\right)= -\left⌈\frac{1}{2}x\right⌉$

11. $f\left(x\right)= \left\{\begin{array}{c}-2x+1; x<-2\\-\left|x\right|+2; x\geq -2\end{array}\right.$ 12. $f\left(x\right)= \left\{\begin{array}{c}-(x+1)^{2}; x\leq -4\\x; -4<x<2\\-\left|2x\right|; x\geq 2\end{array}\right.$

***Evaluate the functions at the following values:***

$13. f\left(x\right)=\left\{\begin{array}{c}x^{2}+2; x\leq -1\\x-3; -1<x\leq 4\\-\left|2x+2\right|; x>4\end{array}\right.$ a) f (- 4) = \_\_\_\_\_\_\_ b) f (2) = \_\_\_\_\_\_\_\_ c) f (6) =\_\_\_\_\_\_\_\_

14. $f\left(x\right)= \left⌈x-2\right⌉$ a) f (- 4.2) = \_\_\_\_\_\_\_ b) f (0.1) = \_\_\_\_\_\_\_\_ c) f (6.5) =\_\_\_\_\_\_\_\_

***Solve:***

15. $2\left⌊x+3\right⌋+4=12$ 16. $6-\left⌈2x-4\right⌉=12$

***Determine if the following are inverses – if not, give the correct inverse:***

17. $f\left(x\right)=3x^{2}-4$ 18. $f\left(x\right)=\frac{1}{4}x+\frac{2}{3}$

$ g\left(x\right)=\pm \sqrt{\frac{x+4}{3}}$$ g\left(x\right)=4x-8$

***Evaluate the following if*** $f\left(x\right)=2x-6$***,*** $g\left(x\right)=\frac{1}{2}x^{2}+x$***, and*** $h\left(x\right)=\left|2x\right|-3$***.***

19. $f(g\left(-3\right))$ 20. $f(h\left(4\right))$ 21. $h(f\left(\frac{-3}{2}\right))$

22. $f∘g(4)$ 23. $h∘h(-3)$ 24. $g∘f(x-3)$

25. Residential wastewater rates are based on a monthly customer charge of $4 plus $1.75 per 1000 gallons of water used. Write a step function to represent the monthly cost, c, in dollars for x gallons of water used.

Write the equations of the functions shown below:

26.  27. 

28.