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

Topics Covered: Systems of Equations & Inequalities, Solving Absolute Value Equations & Inequalities, Finding Inverses, Function Operations and Compositions

System of Equations

1. $\genfrac{}{}{0pt}{}{y+x=-8}{2x+2y=6}$

2. $\genfrac{}{}{0pt}{}{y+4x=4}{y+x^{2}+2x=4}$

3. $\genfrac{}{}{0pt}{}{y=\left|x-3\right|}{5y+2x=27}$

4. $\genfrac{}{}{0pt}{}{y-4x=-6}{2y-8x=-12}$

Systems of Inequalities

8. $\genfrac{}{}{0pt}{}{-y<x+2}{y<-5x+2}$

9. $\genfrac{}{}{0pt}{}{y< \frac{1}{3}x+1}{y\geq -4\left(x-2\right)^{2}+3}$

Applications of Systems

10. A coffee merchant has two types of coffee beans, one selling for $9 per pound and the other selling for $15 per pound. The beans are to be mixed to provide 100 pounds of a mixture selling for $13.50 per pound. How much of each type of coffee bean should be used to form 100 pounds of the mixture?

11. Two car rental agencies have the following rate structures for a subcompact car. Urent charges $50 per day plus $.15 per mile. Painz charges $45 per day plus $.20 per mile. If you rent a car for 1 day, for what number of miles will the two companies have the same total charge?

12. Fuel x costs $2 per gallon and fuel y costs $3 per gallon. You have at most $18 to spend on fuel. Write to represent this situation. [Note: you do NOT need to solve this.]

Absolute Value Equations and Inequalities

13. $\left|2+3x\right|=4$ 14. $\left|4x-2\right|+6\leq 20$

15. $-9\left|m+1\right|-6<93$ 16. $\left|-3+6x\right|+10=31$

Function Combinations and Compositions

*Given that f(x) = 2x – 5 and g(x) = x2 – 3x + 6 find the following:*

17. $(f+g)(x)$

20.$ (g-f)(x)$

18.$ (fg)(-2)$

21.$ g(f(x))$

19.$ f(g(x))$

22.$ (f∘g)(3)$

Finding Inverses

23$\left\{(-5, 6), (0, -1), (7, 4)\right\}$

f-1(x) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_

24. $f\left(x\right)=5x^{3}-7$

D:\_\_\_\_\_\_\_\_ R:\_\_\_\_\_\_\_

f-1(x) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_

D of f-1(x):\_\_\_\_\_\_\_\_\_\_\_

R of f-1(x): \_\_\_\_\_\_\_\_\_\_\_

Function? yes/no

25.$ f(x)=(3x-11)^{2}$

D:\_\_\_\_\_\_\_\_ R:\_\_\_\_\_\_\_

f-1(x) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_

D of f-1(x):\_\_\_\_\_\_\_\_\_\_\_

R of f-1(x): \_\_\_\_\_\_\_\_\_\_\_

Function? yes/no