Math 3 Name: _____

Date: _____ Pd:

Unit 1 Functions & Their Inverses TEST REVIEW

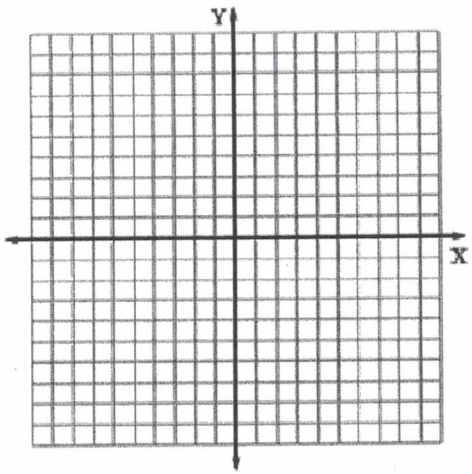
Place the answer to each of the following questions below the question. MUST SHOW WORK on a SEPARATE SHEET of PAPER. NO WORK = NO CREDIT!

1. During a particular year, the taxes owed by a married person filing separately with an adjusted gross income of x dollars is given by the piecewise function below:

$$T(x)=\begin{cases}0.15x & \text{if } 0\le x<17{,}900\\ 0.28(x-17{,}900)+2685 & \text{if } 17{,}900\le x<43{,}250\\ 0.31(x-43{,}250)+9783 & \text{if } x\ge 43{,}250\end{cases}$$

Find and interpret: T (39,000) + T (15,000)

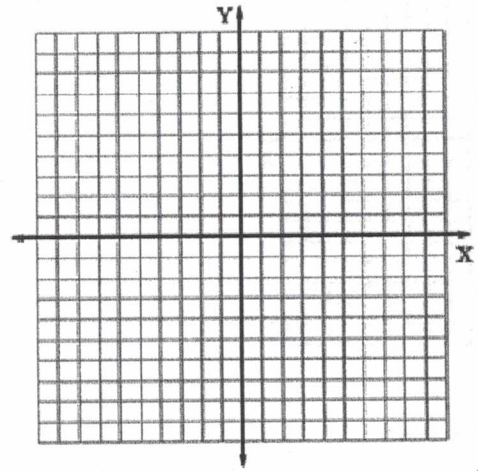
2. Graph the following system of inequalities: $\begin{cases}x-y<1\\ x+2y\ge 4\end{cases}$?



Name: _____

3. Graph the piecewise function:

$$f(x)=\begin{cases}-4 & \text{if } x<-3\\ 6-x & \text{if } -3\le x\le 2\\ 3x-4 & \text{if } x>2\end{cases}$$



4. $-7|3x-8|+10=-39.$

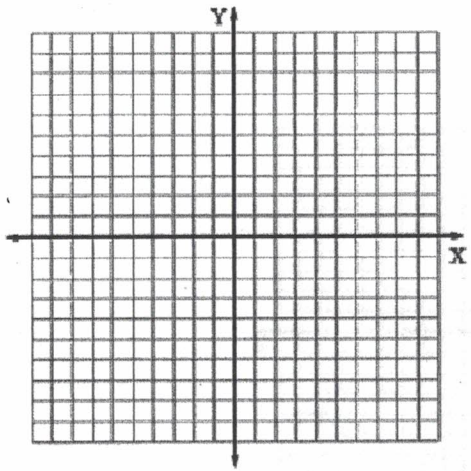
5. Find the value of $\dfrac{f(-1)}{g(4)}$ for the following functions.

$f(x) = 4x - 2$
$g(x) = -2x + 1$

6. If $f(x)=4+\sqrt{x-5}$, then what does $f^{-1}(12)$ equal?

Name: _____

7. Graph the function $f(x) = \frac{1}{3}x - 1$ and its inverse on the same plane.



8. Find $(f \cdot g)(x)$ for the following functions.
   $f(x) = 5x^2 - 7x - 10$
   $g(x) = 3x - 3$

9. $3 - 2|6 - 2x| = 3$

10. A manufacture has a 0.3 oz tolerance for a bottle of salad dressing advertised as 14 oz. Solve an absolute value inequaility that describes the acceptable volumes for '14 oz' bottles.

11. Find the inverse of the given relation.: $\{(8, -12), (-6, 7), (8, -4)\}$

12. The function $f(x)$ contains the point $(5, -7)$, which point is contained in $f^{-1}(x)$?

13. $y < |x - 5| + 1$

Name: _____

14. $10 - 5|9 + x| > 20$

15. $10|2x + 6| + 2 > 102$

16. Find the inverse of the given function.
    $f(x) = \frac{2x - 15}{4}$

17. Find $(f - g)(x)$ for the following functions.
    $f(x) = 15x + 16$
    $g(x) = -13x^2 + 2x + 34$

18. $4 - 3|x + 2| = 16$

19. Find $(f + g)(x)$ for the following functions.
    $f(x) = 4x^2 + 2x + 6$
    $g(x) = 1x + 10$

20. $2|2w - 3| + 1 < 15$