Algebra II   Test Chapter 3   Mr. Pleacher   Name _____

I. Multiple Choice

_____ 1. What is the slope of the line that passes through (4, -6) and (10, 2)?

(A) $\dfrac{4}{3}$ (B) $-\dfrac{4}{3}$ (C) $-\dfrac{3}{4}$ (D) $\dfrac{3}{4}$

_____ 2. What is the equation for the **inverse** of the function y = 4x - 5 ?

(A) y = 4x + 5   (B) y = -4x + 5

(C) $y = \dfrac{1}{4}x - \dfrac{5}{4}$ (D) $y = \dfrac{1}{4}x + \dfrac{5}{4}$

_____ 3. Which of the following is **not** a function?

(A) {(1, 2), (-2, 2), (3, 3)}
(B) {(3, 2), (-2, 6), (3, 3)}
(C) {(2, 6), (-2, -3), (4, 3)}
(D) {(1, 3), (2, 3), (4, 3)}

_____ 4. Given the line 2x + 3y = 4, what is the y-intercept?

(A) –4   (B) $\dfrac{4}{3}$ (C) $-\dfrac{2}{3}$ (D) $-\dfrac{4}{3}$

_____ 5. If f(x) = -3x + 1 and $g(x) = 2x^2$, which is the function $(f \circ g)(x)$?

(A) $(-3x+1)(2x^2)$ (B) $-6x^2 + 1$
(C) $2(-3x+1)^2$ (D) $-2(1-3x)^2$

II. Short Answer   SHOW ALL WORK on your own paper

6. Write an equation of a line in slope-intercept form that passes through the points
    (-6, 6) and (9, 1).

7. Determine the equation of a line that is parallel to the line y = 3x – 5, and passes
    through the origin.

8. Determine the equation of the line in standard form that is perpendicular to the line
   y = 3x - 5 and passes through the point (-6, 1).

9. Write an equation of a line in point-slope form that passes through the point (2, 6)
   and has a slope of –3.

10. State the directions in which the graph of $g(x) = (x+5)^9 + 2$ is translated from the
    graph of $f(x) = x^9$.

11. Write an equation of a line in slope-intercept form that passes through the
    point (-1, -3) and has slope m = $\dfrac{3}{5}$.

12. Use the vertical line test to determine if the graph represents a function:
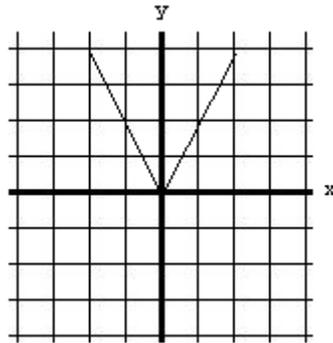
13. Given the function, $f(x) = \dfrac{1}{4}x - 2$.   Determine $f^{-1}(x)$.

    Then graph f(x), $f^{-1}(x)$, and the line y = x on the coordinate axes below.
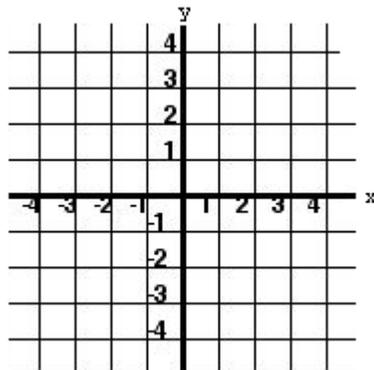
14. Determine the inverse of {(-2, -2), (2, -2), (4, 2)}

15-16. Given f(x) = 3x and g(x) = x – 4,

      15. Determine (f + g)(x)

      16. Determine f(x) – g(x).

17-18. For the functions $f(x) = 4x - x^2$ and $h(x) = x - 6$, Determine the following:

      17. $\left(\dfrac{f}{h}\right)(x)$

      18. the domain of $\left(\dfrac{f}{h}\right)$

19. Assume that y varies directly with x. When x = 25, y = 42.
    Determine y when x = 35.

20. In 1 month, a shoe manager can sell 160 pairs of shoes at $50 per pair. If he lowers
    the price to $40 per pair, he can sell 200 pairs of shoes in the same period. Assume
    that there is a linear relationship between price and number of shoes sold and that
    the price is the independent variable. Write the linear equation for the relationship.
    How many shoes will be sold monthly if the3 price is $30?

21. A volume of 25 gal is equivalent to a volume of 94.6 L.
    Determine the constant of variation (Liters per gallon).