

## Kerry Ojakian's MTH 28.5 Class

**Due Date:** Thursday March 21 (at the beginning of class)

## HW #2

### General Instructions:

- Homework must be stapled, be relatively neat, and have your name on it. It must be on separate paper, not on this paper (though you do not need to copy the question).
- Homework exercises must be done in order (if you skip an exercise, still write down the number and leave some blank space).
- Don't copy!

## The Assignment

1. Find the Least Common Multiple (LCM) for the numbers in each part.

(a) 10 and 4

(b) 1 and 8

(c) 8 and 4 and 3

2. Simplify each expression

(a)  $\frac{12}{9}$

(b)  $\frac{-21}{-7}$

(c)  $-|-9|$

3. Calculate the following (and simplify):

(a)  $|9 - 12| - |-6| + 3|5 - 6|$

(b)  $(-3) \cdot (-2)^3$

(c)  $1000 \cdot (-3) - 2 \cdot 10^3$

(d)  $-4 + 8 \div 8 - (-5)(-3)$

(e)  $-\frac{1}{2} + \frac{-4}{5} + -\frac{2}{3}$

4. Perform the operation and simplify

(a)  $\frac{-2}{5} \cdot \frac{30}{7}$

(b)  $\frac{16}{21} \div \frac{8}{7}$

(c)  $\frac{-2}{3} + 6$

(d)  $\frac{-3}{4} - \frac{1}{6}$

5. Solve for the indicated variable in each equation.

(a) Solve for  $y$  in the formula  $x + y = 7$

(b) Solve for  $L$  in the formula  $L \cdot W \cdot H = V$

(c) Solve for  $n$  in the formula  $PV = nRT$

6. Consider the expression  $2x^2 - x + 3$

(a) Evaluate the expression when  $x = 3$

(b) Evaluate the expression when  $x = -3$

7. Solve each of the following equations.

(a)  $3x + 7 = 40$

(b)  $4x - 1 = 9$

(c)  $6 - 2x = x$

(d)  $-6 - 7x = -3x$

(e)  $5(x + 2) = 15$

(f)  $2(x + 2) = 2x - 2$

(g)  $3(4x - 3) = 2(x + 1) - 1$

8. Suppose Mary is thinking of a number. If you add 42 to her number you get 50. What number is she thinking of?

9. Suppose a number is doubled and then 23 is added to it. If the result is 107, then what is the number?

10. Suppose there are two numbers and one of them is three times larger than the other. If the sum of the numbers is 100, what are the two numbers?

11. Graph the following two inequalities on the number line.

(a)  $x > 5$

(b)  $x \leq 2/3$

12. Solve inequality and graph its solution on the number line:

$$10 - 4x < 20$$

13. Solve each inequality (note: one has NO Solution; the other has ALL numbers as a solutions; figure out which is which, justifying your answer).

(a)  $2x < x + x + 3$

(b)  $3(x - 1) \geq 3x - 1$

14. For each of the following equations, if we graph it on the plane, do we get a line or not?

(a)  $45x - y = 5x + 8y - 9$

(b)  $y = 8$

(c)  $y = x^2$

15. Find three different points on the following line (note that each point is a PAIR of numbers):

$$y + 5 = 2x$$

Then graph the line.

16. Find x intercept and y intercept of line  $2y = x + 2$  then graph the line.

17. Graph following lines, and find their slopes.

(a)  $x = 3$

(b)  $y = 0$

18. Graph following lines, find their slopes, and find their equations.

(a) The vertical line passing through the point  $(-3, -4)$ .

(b) The horizontal line passing through the point  $(-3, -4)$ .

19. Write each line in slope-intercept form, then find its slope and y-intercept.

(a)  $-4x + 1 - y = 0$

(b)  $3y = 18x - 3$

(c)  $x + y = 0$

20. Find the slope and y intercept of each line.

(a)  $y = 7x - 1$

(b)  $y = 20x$

(c)  $6x + y - 2 = 0$

21. Find the slopes.

(a) Find the slope of a line that contains the points  $(3, 2)$  and  $(5, 6)$ .

(b) Find the slope of a line that contains the points  $(-3, -7)$  and  $(-5, 4)$ .

22. Consider the function  $f(x) = \left(-\frac{3}{2}\right)x - 2$

(a) Find  $f(0)$

(b) Find  $f(-3)$

(c) Find  $f(2)$

(d) Graph the function.

23. Consider the function  $f(x) = 4x^3 + 1$

(a) Find  $f(0)$

(b) Find  $f(2)$

(c) Find  $f(-2)$

24. (Challenge!) Suppose there are three friends. The oldest is twice the age of the youngest. The friend whose age is in the middle, is 16 years older than the youngest. Their ages add up to 160. How old is each friend? (i.e. your answer should be three numbers)