First name: _____ Last name: _____ Student ID: _____

Algebra Homework

Basic problems:

1. Complete by evaluating each expression.

1. $h^3 - 2h$ for $h = 7$	2. $2x^2 - 11x + 6$ for $x = 12$	3. $d^2 - 2d + d$ for $d = 9$
4. $2k^2 + 5k + 2$ for $k = 11$	5. $x^2 + 2x + 4 + x$ for $x = 10$	6. $j^3 + 11j - 4$ for $j = 8$

2. Solve each equation. Show work!

1. $-(x + 2) = 2(3x - 6)$	2. $2x + 6 = 3x + 9 - 3$	3. $4(x - 3) - (x - 5) = 0$
4. $9.2y - 4.3 = 50.9$	5. $6 + 3x = 5(x - 1) - 3(x - 2)$	6. $0.05z + 0.2 = 0.15z - 10.5$

3. Combine like terms.

1. $11 - u - 14u + 13u$	2. $15z - 2z$
3. $4c - 9c^2 - 5c^4 - 10c^4 - 18c + 7c^2 + 12c$	4. $17 - 3v^2 - 6 - 19v + 8v^2 - 16v$
5. $g^2 - 3g - 12g^4 - 6g^2 - 8g$	6. $2 - 16j - 5j^2 + 18j$

Challenge problems

1. Which statement is true?
   a. The solution of $\frac{2}{3}x-\frac{4}{5}=\frac{3}{8}x+\frac{5}{7}$ is less than the solution of $\frac{2}{3}y-\frac{4}{5}=\frac{3}{8}y+\frac{5}{7}$.

   b. The solution of $3x+9=27$ is equal to the solution of $x+6=24$.

   c. The solution of $4(x-3)=36$ is greater than the solution of $x-3=9$.

   d. The solution of $\frac{1}{x}=8$ is less than the solution of $8x=1$.

   e. The solution of $\frac{2x}{6}=15$ is equal to the solution of $\frac{x}{3}=15$

2. Which of the following statements is false?
   a. There is a greatest negative integer.
   b. Between any two rational numbers, there is another rational number.
   c. Between any two irrational numbers, there is another irrational number.
   d. There is a least non-negative rational number.
   e. There is a greatest negative rational number.

3. What number, when divided by six more than the number, is 16/19?

4. Two times the sum of two numbers is 30. Five times the sum of the same two numbers is 75. The difference of the two numbers is 9. What are the numbers?

5. Eighty people are trapped in a ski lodge. They have enough food to last eight days. It takes five days to reach help (and five days for help to get back to the lodge). What is the fewest number of people to send for help (with sufficient food) so that those staying behind will be rescued before food runs out?

6. Four friends always eat dinner together at the same restaurant on Friday evenings. The average (mean) price of their four dinners is $5.25. One Friday, a fifth person joined the group. The four regulars ordered their usual meals. That night the average (mean) meal price of the five dinners was $5.50. What was the cost of the new person's meal?

7. In Math Idol, there was a total of 5219000 votes cast for four potential Idols. The winner received 22000 more votes than the 2nd place contestant, 30000 more than the 3rd place contestant, and 73000 more than the 4th place contestant. How many votes did the winner receive?

8. The mean high temperature in Nashville for the first twenty-one days of February was 46 degrees. What must the mean high temperature for the days from February 22 to February 28 be in order to raise the mean temperature for the entire month to 50 degrees?

9. Lynn agreed to work for a neighbor for 30 days. At the end of the 30 days, the neighbor would pay Lynn $858 plus a puppy. Lynn quit the job after 20 days. The neighbor paid Lynn $538 and the puppy. Assuming the pay was in accordance with the original agreement, how much was the puppy worth?

10. Will signed a contract to build 35 birdhouse in one month. According to the contract, he received $20 for every birdhouse he finished by the end of the month, but he was fined $6 for each one he failed to make. At the end of the month, he received a check for $388. How many birdhouses did Will make by the end of the month?