Math-8 Practice Exam #2

1). Identify the following:

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ _____

$D = b^2 - 4ac$ _____

$ax^2 + bx + c = 0$ _____

2). Muri is a shopkeeper that specializes in pickled vegetables. She has determined over the years that the best brine (salt solution) for pickling vegetables is 2 kg of salt per liter of water (2 kg/L). One day, she has her not-so-bright nephew helping her and he uses too much salt, resulting in a 5 kg/L solution. If her nephew made up 10 liters of the too-salty solution, how much pure water must he add to it to get the ideal 2 kg/L solution?

3). Solve for x by completing the square:

$$3x^2 + 5x - 2 = 0$$

4). Solve the same equation using the quadratic formula.

5). Using the results from the previous two problems, state a factorization for the original quadratic equation. You must use the previous results for full credit.

6). Solve the following:

a). Solve for x. State you answer both graphically and using setbuilder notation:

$$|3x - 2| - 1 = 5$$

b). Solve for x. State you answer graphically, using interval notation, and using interval notation.

$$|3x - 2| - 1 \leq 5$$

c). Solve for x. State you answer graphically, using interval notation, and using interval notation.

$$|3x - 2| - 1 > 5$$

7). We discussed in class the four possibilities of a discriminant and how they predict the number and type of solutions to the corresponding quadratic equation. List the four cases, including discriminant value, number of solutions, and type of solutions.

D	COUNT	TYPE

8). Solve for x;

$$x^4 + 5x^2 - 24 = 0$$

9). Solve for x:

$$(x-2)^{\frac{3}{4}} - 27 = 0$$

10). Solve for x, stating your answer in interval notation. A full credit answer includes the work that shows a graphical representation and a sign table.

$$\frac{x^2(2-x)(x+2)}{(4+x)(5-x)^2} \leq 0$$