Math 8

Study guide for quadratics exam

Here is what you should understand and what you should be able to do on the quadratics exam.

A. Solve quadratic equations by each of the following methods:

[1] factoring,
[2] completing the square,
[3] the quadratic formula.

Several questions will specify the method that you **must** use. Several questions will leave the choice of method up to you.

You must be able to factor quadratic expressions in order to get a good grade on this exam.

You must know the quadratic formula by heart. You will not be asked to derive it on this exam.

B. Understand that all methods of solving a quadratic equation depend on the fact that if $a\,b = 0$ then either $a = 0$ or $b = 0$ or both a and b equal zero.

C. Extension of item B: if the product of any number of factors equals zero then at least one of those factors must equal zero. For example,

If $(x-2)\,(x+3)\,(x-7) = 0$ then $x = 2,\ x = -3,\ x = 7$ are solutions of the equation.

E. Understand the role of the expression $b^2 - 4\,a\,c$ in determining the nature of the solutions of a quadratic equation; the possible kinds of solutions are: [1] two distinct real number roots, [2] one real number root multiplicity two, [3] no real number roots.

F. Word problems that lead to a quadratic equation. Realize that not all solutions to the equation you set up and solve will necessarily be solutions to the problem you were given; each solution to the equation must be checked in the context of the story problem. For example, if you are asked to find the width of a rectangle and your equation produces $x = 5,\ x = -3$, then $x = -3$ is excluded because length is not a negative number.

Letters introduced into the solution of a story probelem must be defined. Do not use x in your solution without first stating exactly what x represents.

The answer to a story problem must be an English sentence; for example, "Jane had $20 after the purchase." Just writing "$20" with a circle around it or "x = $20" will not get full credit.