Section 7.3 (The Quadratic Formula)

Many quadratic equations cannot be solved by factoring and because completing the square is so tedious, we almost always turn to the quadratic formula to solve quadratic equations. Besides the quadratic formula is the result of the pattern involved when solving by completing the square. Let's show the proof here, which was the bonus question for you last night:

$ax^2 + bx + c = 0$

The objective for this section is to:

- Solve a quadratic equation using the quadratic formula.

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

Solve using the quadratic formula (do the first 3 together and then have the students do some):

1. $5x^2 + 8x = -3$

2. $3x^2 - 6x - 4 = 0$

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3. $x^2 + 2 = -x$

4. $x^2 + 6x + 9 = 2$

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

6. $x^2 + x + 1 = 0$

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7. $7x(x+2)+5=3x(x+1)$

8. $f(x)=\frac{7}{x}+\frac{7}{x+4}$ *find all* x *for which* $f(x)=1$

9. When a number is added to its square, the result is 240. Find the number.

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10. The mechanical power developed in an electric motor is given by

$$P = T - I^2 R$$

Find the current *I* (in amperes) if the power *P* is 448 W, the total power *T* is 480 W, and the resistance *R* is 2.00 ohms.

11. A rectangular piece of sheet metal has a length that is twice the width. In each corner, a 3-in. square is cut out, and the outer strips are then bent up to form an open box with a volume of 168 in^3. Find the dimensions of the original sheet.