Section 4-7
The Quadratic Formula

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-We can use the quadratic formula to solve a quadratic equation that is in standard form.

If $ax^2 + bx + c = 0$, and a is not 0, then the solutions (roots) are:

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

-put on your notecards

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Use the quadratic formula to solve:

$2x^2 - x - 4 = 0$

$a = 2$
$b = -1$
$c = -4$

$$x = \frac{-(-1) \pm \sqrt{(-1)^2 - 4(2)(-4)}}{2(2)}$$

$$x = \frac{1 \pm \sqrt{1 + 32}}{4}$$

$$x = \frac{1 \pm \sqrt{33}}{4}$$

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Solve using the quadratic formula.

$x^2 + 4x + 4 = 0$

$a = 1$
$b = 4$
$c = 4$

$$x = \frac{-4 \pm \sqrt{16 - 16}}{2(1)} = \frac{-4}{2} = -2$$

$$(x + 2)^2 = 0$$

$$x + 2 = 0$$
$$-2 \quad -2$$
$$x = -2$$

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You are selling wrapping paper to raise money for the underwater basket-weaving club this holiday season. The equation $p = -6x^2 + 280x - 1200$ models the total profit p as a function of the price x per roll. What is the smallest amount in dollars you can charge per roll to make a profit of $1500?

$$0 = -6x^2 + 280x - 2700$$

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The Discriminant:

$b^2 - 4ac$ is called the discriminant

If $b^2 - 4ac > 0$, then the quadratic has 2 distinct real solutions

If $b^2 - 4ac = 0$ then the equation has 1 real solution (a double root)

If $b^2 - 4ac < 0$, the the equation has 0 real solutions.

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Find the discriminant. Then determine the number of real solutions.

$2x^2 - 3x = -7$

$a = 2$
$b = -3$
$c = 7$

$(-3)^2 - 4(2)(7)$
$9 - 56 = -47$
0 Real Sol.

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Hwk: pg 245-247
#40 - 54 evens,
58 - 66 (4th), 68, 70

Pg 238-239
46, 50, 52, 54, 58

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Nov 18-10:36 AM