BE - Algebra 1 Monday 3-5-12

Copy for notes / flash cards:

The new method for solving ANY Quadratic Equation $ax^2+bx+c=0$

"The" Quadratic Formula

$$x = \frac{-b \pm \sqrt{d}}{2a} \qquad d = \text{discriminant}, \quad d = b^2-4ac$$

(Ex) $2x^2+5x-6=0$

$a=2$, $b=5$, $c=-6$

b^2-4ac

$(5)^2-4(2)(-6)$

$25+48=\boxed{73=d}$

$$x=\frac{-b\pm\sqrt{d}}{2a}=\frac{-5\pm\sqrt{73}}{4}$$

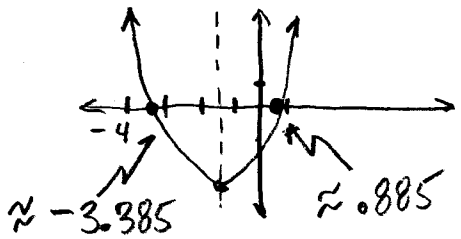
or $\boxed{x=\left\{\frac{-5+\sqrt{73}}{4}, \frac{-5-\sqrt{73}}{4}\right\}}$

EXACT

The x values are the x-intercepts or roots of the parabola = quadratic function

QE $2x^2+5x-6=0$

QF $2x^2+5x-6=y$



$$x \approx \left\{\frac{-5+8.54}{4}, \frac{-5-8.54}{4}\right\}$$

$$x \approx \left\{\frac{3.54}{4}, \frac{-13.54}{4}\right\}$$

$$\boxed{x \approx \{.885, -3.385\}}$$

APPROXIMATE

RECALL THE 2 RULES for

Simplifying radicals ($\sqrt{\ }$)

(1.) "Extract" any perfect square factors

(EX) $\sqrt{40} = \sqrt{4}\sqrt{10} = \boxed{2\sqrt{10}}$

EXTRACT THE "2" — SIMPLIFIED

(2.) do not leave a $\sqrt{\ }$ in bottom of fraction

"RATIONALIZE the denominator"

(EX) $\frac{6}{\sqrt{3}} = \frac{6}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{6\sqrt{3}}{3} = \boxed{2\sqrt{3}}$

(EX) $\frac{6}{\sqrt{3}-5} = \frac{6}{\sqrt{3}-5} \cdot \frac{\sqrt{3}+5}{\sqrt{3}+5}$

conjugates

$= \frac{6\sqrt{3}+30}{(\sqrt{3})^2-(5)^2}$

$= \frac{6\sqrt{3}+30}{3-25} = \frac{6\sqrt{3}+30}{22}$

$= \boxed{\frac{3\sqrt{3}+15}{11}}$