Algebra 1 Solving Quadratic Equations Notes

Day 3 - Solving by Quadratic Formula

What method do you use when your equations are not factorable, but are in standard form, and a may not be 1 and b may not be even?

The Quadratic Formula

for equations in standard form: $y = ax^2 + bx + c$

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

x represents the zeros and $b^2 - 4ac$ is the discriminant

discrim.
− = no
+ = 2

For the quadratic equations below, use the quadratic formula to find the solutions. Write your answer in simplest radical form.

1) $4x^2 - 13x + 3 = 0$ a = 4 b = -13 c = 3

$b^2 - 4ac = (-13)^2 - 4(4)(3)$

$169 - 48 = 121$

$x = \frac{-b \pm \sqrt{\quad}}{2a}$

$x = \frac{13 \pm \sqrt{121}}{2(4)}$

$+: \frac{13+11}{8} = \frac{24}{8} = 3$

$-: \frac{13-11}{8} = \frac{2}{8} = \frac{1}{4}$

Discriminant: 121 = + (2 sol.)

Solutions: x = 3, x = 1/4

2) $9x^2 + 6x + 1 = 0$ a = ___ b = ___ c = ___

Discriminant: _____

Zeros: _____

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3) $6x^2+3=0x$ a = 6 b = -10 c = 3

$6x^2-10x+3=0$

$b^2-4ac=(-10)^2-4(6)(3)$

$100-72=28$

$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}=\frac{10\pm\sqrt{28}}{2(6)}$

Discriminant: 28

X = _____

$\frac{10\pm\sqrt{28}}{12}=\frac{10\pm2\sqrt{7}}{12}$

$28=4\cdot7$

$x=\frac{5\pm\sqrt{7}}{6}$

4) $\frac{1}{2}x^2+6x+13=0$ a = 1/2 b = 6 c = 13

$b^2-4ac=6^2-4(\frac{1}{2})(13)$

$36-26=10$

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

$x=\frac{-6\pm\sqrt{10}}{2(\frac{1}{2})}$

Discriminant: 10

Roots: _____

$x=\frac{-6\pm\sqrt{10}}{1}$

$10=2\cdot5$

$x=6\pm\sqrt{10}$