* another method of solving a quadratic equation

$ax^2+bx+c=0$

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

b^2-4ac → discriminant

$b^2-4ac = 0$ 1 real solution

$b^2-4ac > 0$ 2 real solutions

$b^2-4ac < 0$ no real solutions
2 imaginary solutions

ex 1 $2x^2+7x-9=0$

$a=2 \quad b=7 \quad c=-9$

$$\frac{-7\pm\sqrt{(7)^2-4(2)(-9)}}{2(2)}$$

$$\frac{-7\pm\sqrt{121}}{4}$$

$$\frac{-7\pm 11}{4} = \begin{cases} \frac{-7+11}{4}=\frac{4}{4}=1 \\ \frac{-7-11}{4}=\frac{-18}{4}=\frac{-9}{2} \end{cases}$$

Ex 2 $4m^2 = 7m + 2$

$-7m \quad -2$

$4m^2 - 7m - 2 = 0$

$a = 4 \quad b = -7 \quad c = -2$

$$\frac{7 \pm \sqrt{(-7)^2 - 4(4)(-2)}}{2(4)}$$

$$\frac{7 \pm \sqrt{81}}{8}$$

$$\frac{7 \pm 9}{8}$$

$\frac{7+9}{8} = \frac{16}{8} = 2$

$\frac{7-9}{8} = \frac{-2}{8} = -\frac{1}{4}$

$$-1 = 3n^2 - 5n$$

$+1 \qquad +1$

$$0 = 3n^2 - 5n + 1$$

$a = 3 \quad b = -5 \quad c = 1$

$$\frac{5 \pm \sqrt{(-5)^2 - 4(3)(1)}}{2(3)}$$

$$\frac{5 \pm \sqrt{13}}{6}$$

- Perfect Square?
- Can I Simplify?

Ex 4

$$5w^2+4=w+6$$

$$-6 \quad -w \quad -6$$

$$5w^2-w-2=0$$

$a=5 \quad b=-1 \quad c=-2$

$$\frac{1\pm\sqrt{(-1)^2-4(5)(-2)}}{2(5)}$$

$$\frac{1\pm\sqrt{41}}{10}$$

$$\frac{2 \pm \sqrt{48}}{4}$$

$\sqrt{48}$

$4 \quad 12$

$4 \quad 3$

$$\frac{2 \pm 4\sqrt{3}}{4} = \frac{2}{4} \pm \frac{4\sqrt{3}}{4}$$

$$\frac{1 \pm 2\sqrt{3}}{2} \qquad \frac{1}{2} \pm \sqrt{3}$$

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

$a = 4 \quad b = 0 \quad c = -4$