

* another method
of solving a quadratic
equation
 $ax^2 + bx + c = 0$

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

↓
discriminant

$$b^2 - 4ac = 0$$

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

$$b^2 - 4ac < 0$$

1 real solution

2 real solutions

no real solutions

2 imaginary solutions

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

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

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

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

$$\frac{-7 \pm 11}{4} = \left\{ \begin{array}{l} \frac{-7+11}{4} = \frac{4}{4} = 1 \\ \frac{-7-11}{4} = \frac{-18}{4} = \frac{-9}{2} \end{array} \right.$$

$$\underline{\text{Ex 2}} \quad 4m^2 = 7m + 2$$

$$-7m - 2$$

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

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

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

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

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

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

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

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

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

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

- Perfect Square?
- Can I Simplify?

Ex 4

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

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

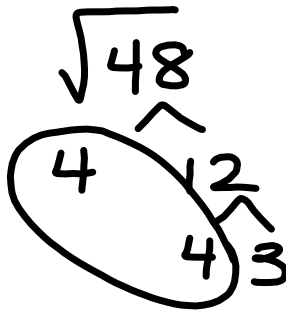
$$5w^2 - w - 2 = 0$$

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

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

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

$$\frac{2 \pm \sqrt{48}}{4}$$
$$\frac{2 \pm 4\sqrt{3}}{4} = \frac{2}{4} \pm \frac{4\sqrt{3}}{4}$$
$$\frac{1 \pm 2\sqrt{3}}{2} = \frac{1}{2} \pm \sqrt{3}$$





$$4x^2 - 4 = 0$$
$$a = 4 \quad b = 0 \quad c = -4$$