

THE QUADRATIC FORMULA

For any $ax^2+bx+c=0$,

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

Ex. Solve $2x^2+6x-3=0$
 $a=2$ $b=6$ $c=-3$

$$x = \frac{-6 \pm \sqrt{(6)^2 - 4(2)(-3)}}{2(2)}$$

$$x = \frac{-6 \pm \sqrt{36+24}}{4}$$

$$x = \frac{-6 \pm \sqrt{60}}{4}$$

$$x = \frac{-6 \pm 2\sqrt{15}}{4}$$

$$x = \frac{-3 \pm \sqrt{15}}{2}$$

} Reduce.

$$x^2 - 4x + 15 = 0$$

$$x = \frac{4 \pm \sqrt{(-4)^2 - 4(1)(15)}}{2(1)}$$

$$= \frac{4 \pm \sqrt{16 - 60}}{2}$$

$$= \frac{4 \pm \sqrt{-44}}{2}$$

$$= \frac{4 \pm i\sqrt{44}}{2}$$

$$= \frac{4 \pm 2i\sqrt{11}}{2}$$

$$\boxed{= 2 \pm i\sqrt{11}}$$

$$\sqrt{-44}$$

$$= \sqrt{-1} \sqrt{44}$$

$$= i\sqrt{44}$$

$$\sqrt{44}$$

$$= \sqrt{4} \sqrt{11}$$

$$= 2\sqrt{11}$$

Reduce