· September 5

# Quadratic Formula Part 3

Ex1 Solve: $2x^2+7x+1=16$

$-16 \quad +16$

step 1: $2x^2+7x-15=0$

step 2: a: 2 b: 7 c: -15

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

step 3: $$x=\frac{-(7)\pm\sqrt{(7)^2-4(2)(-15)}}{2(2)}$$

step 4: $$x=\frac{-7\pm\sqrt{169}}{4} \longrightarrow \sqrt{169}$$

169

13 13

$\sqrt{13\cdot 13}$

13

13

step 5: $$x=\frac{-7\pm 13}{4}$$

Step 6: Simplify whole fraction.

$$x=\frac{-7+13}{4} \qquad x=\frac{-7-13}{4}$$

$\boxed{x=\frac{3}{2}}$ $\boxed{x=-5}$

Ex2 Solve: $2x^2 - 8x - 5 = 0$

a: 2 b: −8 c: −5

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

$$x = \frac{-(-8) \pm \sqrt{(-8)^2 - 4(2)(-5)}}{2(2)}$$

$$x = \frac{8 \pm \sqrt{104}}{4}$$

$\sqrt{104}$

104

$104 = 2 \cdot 52$

$52 = 26 \cdot 2$

$26 = 13 \cdot 2$

$\sqrt{2 \cdot 2 \cdot 2 \cdot 13}$

$2\sqrt{2 \cdot 13}$

$2\sqrt{26}$

$$x = \frac{8 \pm 2\sqrt{26}}{4} \quad (\div 2 \text{ on top and bottom})$$

$$x = \frac{4 \pm 1\sqrt{26}}{2}$$

$$\boxed{x = \frac{4 \pm \sqrt{26}}{2}}$$

$$x = \frac{4 + \sqrt{26}}{2} \qquad x = \frac{4 - \sqrt{26}}{2}$$

Ex3 Solve: $x^2+6x+25=0$

a: 1 b: 6 c: 25

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

$$x=\frac{-(6)\pm\sqrt{(6)^2-4(1)(25)}}{2(1)}$$

$$x=\frac{-6\pm\sqrt{-64}}{2}$$

$\sqrt{-64}$

$\sqrt{\ominus 64}$

$i\sqrt{64}$

64

2 · 32

2 · 16

2 · 8

2 · 4

2 · 2

$i\sqrt{2\cdot2\cdot2\cdot2\cdot2\cdot2}$

$2\cdot2\cdot2i$

$8i$

$$x=\frac{-6\pm 8i}{2}$$ (÷2 ÷2 ÷2)

$$x=\frac{-3\pm 4i}{1}$$

$$\boxed{x=-3\pm 4i}$$

$x=-3+4i$ $x=-3-4i$