

Quadratic Formula

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

Ex) $x^2 - 5x - 14 = 0$

$a = 1$ $b = -5$ $c = -14$

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(1)(-14)}}{2(1)}$$

$$= \frac{5 \pm \sqrt{25 + 56}}{2}$$

$$= \frac{5 \pm \sqrt{81}}{2}$$

$$= \frac{5 \pm 9}{2} \rightarrow \begin{array}{l} \frac{5+9}{2} = 7 \\ \frac{5-9}{2} = -2 \end{array}$$

Ex) $x^2 = 8x - 2$
 $-8x + 2$

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

$$x^2 - 8x + 2 = 0$$

$a = 1$ $b = -8$ $c = 2$

$$x = \frac{-(-8) \pm \sqrt{(-8)^2 - 4(1)(2)}}{2(1)}$$

$$= \frac{8 \pm \sqrt{64 - 8}}{2}$$

$$= \frac{8 \pm \sqrt{56}}{2}$$

$$= \frac{8 \pm 2\sqrt{14}}{2}$$

$$\begin{array}{c} \sqrt{56} \\ \swarrow \quad \searrow \\ \sqrt{4} \quad \sqrt{14} \\ 2\sqrt{14} \end{array}$$

$$= 4 \pm \sqrt{14}$$

$$\text{Ex) } 3x^2 - 5x + 3 = 0$$

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

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

$$= \frac{5 \pm \sqrt{25 - 36}}{2(3)}$$

$$= \frac{5 \pm \sqrt{-11}}{6} \rightarrow \text{No Solution}$$

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2, 4.5 \rightarrow Real answers (#1)

3, 48, 50 \rightarrow $\sqrt{\quad}$ (#2)

8, 9 \rightarrow N.S (#3)