

QUADRATIC FORMULA AND DISCRIMINANT

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

$$\textcircled{1} \quad x^2 - 12x - 28 = 0$$

$$a = \boxed{1} \quad b = \boxed{-12} \quad c = \boxed{-28}$$

$$\frac{12 \pm \sqrt{-12^2 - 4(1)(-28)}}{2(1)}$$

$$\frac{12 \pm \sqrt{144 + 112}}{2}$$

$$\frac{12 \pm \sqrt{256}}{2}$$

$$\frac{12 \pm 16}{2}$$

$$\frac{12 + 16}{2} \text{ and } \frac{12 - 16}{2}$$

$$x = 14 \quad \text{and} \quad x = -2$$

$$\textcircled{2} \quad 16x^2 - 24x + 9 = 0$$

$$a = \boxed{16} \quad b = \boxed{-24} \quad c = \boxed{9}$$

$$\frac{24 \pm \sqrt{-24^2 - 4(16)(9)}}{2(16)}$$

$$\frac{24 \pm \sqrt{576 - 576}}{32}$$

$$\frac{24 \pm \sqrt{0}}{32}$$

$$\frac{24 \pm 0}{32}$$

$$\frac{24}{32} \quad x = \frac{3}{4}$$

$$\textcircled{3} \quad x^2 - 4x = -13$$

$$x^2 - 4x + 13 = 0 \quad a = \boxed{1} \quad b = \boxed{-4} \quad c = \boxed{13}$$

$$\frac{4 \pm \sqrt{-4^2 - 4(1)(13)}}{2(1)}$$

$$\frac{4 \pm \sqrt{16 - 52}}{2}$$

$$\frac{4 \pm \sqrt{-36}}{2}$$

$$\frac{4 \pm 6i}{2}$$

$$x = \frac{2 \pm 3i}{1} \text{ or } \textit{just} \quad 2 \pm 3i$$

$$\textcircled{4} \quad 2x^2 + 4x - 3 = 2$$

$$2x^2 + 4x - 5 = 0 \quad a = \boxed{2} \quad b = \boxed{4} \quad c = \boxed{-5}$$

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

$$\frac{-4 \pm \sqrt{16 + 40}}{4}$$

$$\frac{-4 \pm \sqrt{56}}{4}$$

$$\frac{-4 \pm 2\sqrt{14}}{4} \quad \textit{or} \quad \textit{just} \quad \frac{-2 \pm \sqrt{14}}{2}$$

DISCRIMINANT

$$\text{For \#1: } D = \underline{256}$$

$$\text{For \#2: } D = \underline{0}$$

$$\text{For \#3: } D = \underline{-36}$$

(a) 2-rational solutions

 (b) 2-irrational solution

(c) 1-rational solution

(d) 2-imaginary solutions

(a) 2-rational solutions

(b) 2-irrational solution

 (c) 1-rational solution

(d) 2-imaginary solutions

(a) 2-rational solutions

(b) 1-irrational solutions

(c) 1-rational solution

 (d) 2-imaginary solutions

For #4? $D = 56$, has 2-irrational solutions (the square root of 56 does not come out even)